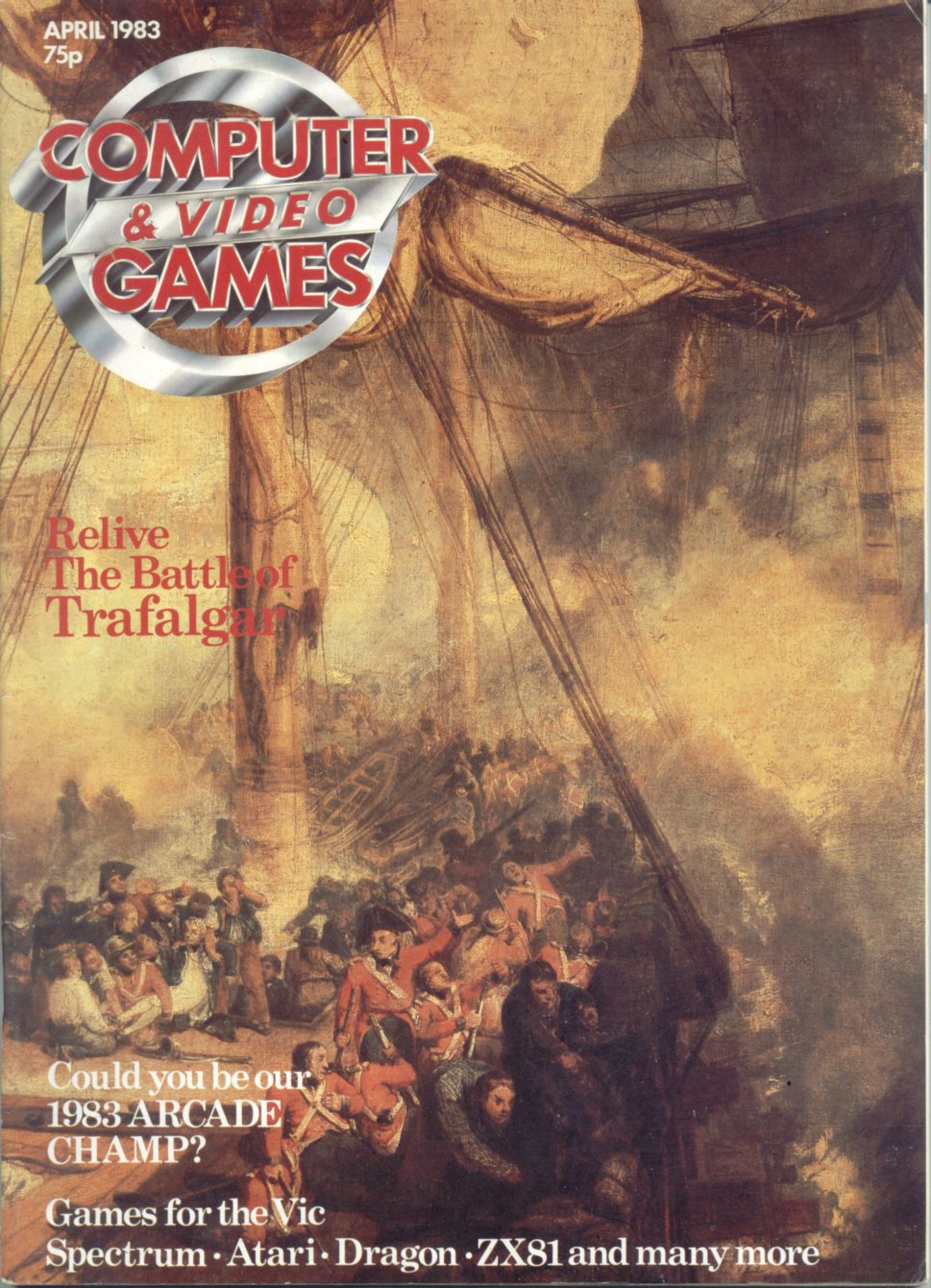

APRIL 1983
75p
COMPUTER & VIDEO GAMES
Relive The Battle of Trafalgar
Could you be our 1983 ARCADE CHAMP?
Games for the Vic
Spectrum · Atari · Dragon · ZX81 and many more

SPECTRAVISION™

For the ATARI® Video Game System



A NEW CHALLENGE – To test your skills
MORE FUN – For all the family

The Spectravision range of video games for the Atari Video Game System presents realistic sound effects, advanced colour graphics and more action at prices the whole family can afford.

At your local video games stockist NOW!

C1
Please send me your fully illustrated games leaflet.

Name____________________

Address____________________

VPD Limited (Video Games Division)
GEC Estate, East Lane, Wembley, Middlesex HA9 7FF.

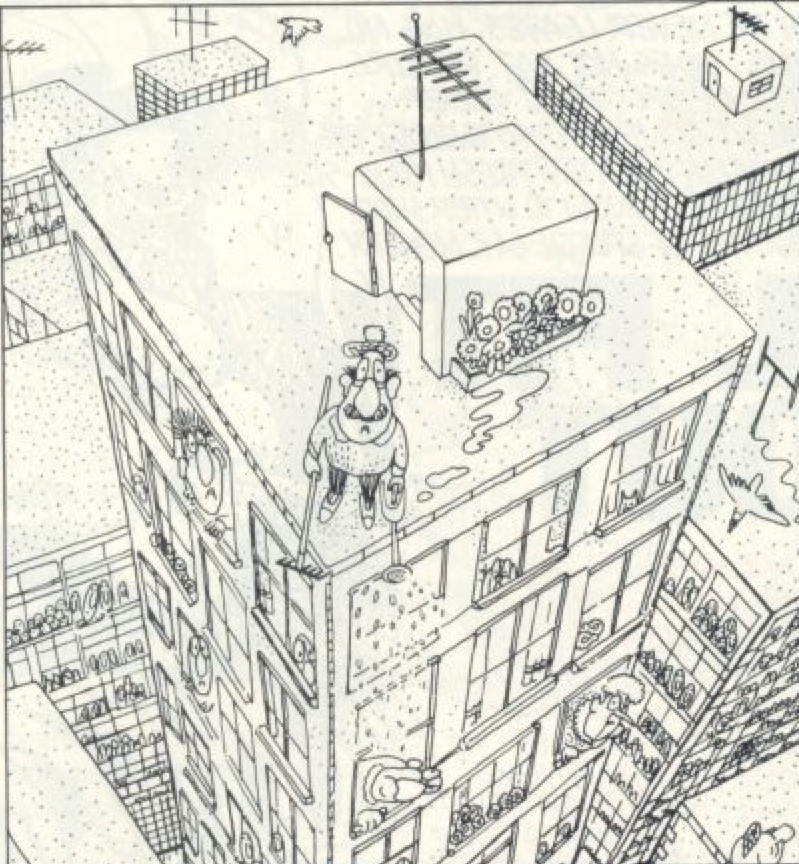
Spectravision is not related to Atari®, Inc.

COMPUTER & VIDEO GAMES

CONTENTS

APRIL 1983 Vol II. No 5

News & Reviews



Avast landlubbers!

Harken back to the days when Horatio Nelson ruled the Seven Seas with a rod of iron and 15lb of cannonball.

Our Trafalgar game reconstructs the thrills of the great sea battles when Men O'War clashed with countries and kingdoms teetering on the outcome.

Our ZX81 game gives two rival admirals fleets to command as they battle one another, plus the elements in this thrilling game of strategy.

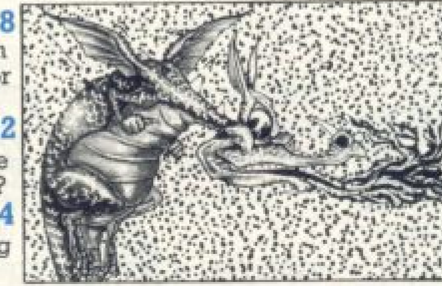
Election transports you into Pet politics with the hard job of vote-winning to put your party into power at the next general election. And with the current state of politics it could be a test run for the real thing in a couple of month's time.

Logger offers a different look at the Donkey Kong game featuring a lumberjack and a far from helpful bird. It runs on the Vic-20 computer.

Then there's space drama, dragons and a deadly maze. The fun starts here!

Listings





Features

Editor Terry Pratt, **Staff Writer** Eugene Lacey, **Editorial/Publishing Asst.** Susan Cameron, **Art editor** Linda Freeman, **Production editor** Tim Metcalfe,
Advertisement manager Rita Lewis, **Advertising executives** John Phillips, Louise Matthews **Advertisement assistant** Louise Flockhart, **Publisher** Tom Moloney,
Editorial and advertisement offices: Durrant House, 8 Herbal Hill, London EC1R 5JB; Telephone Editorial 01-278 6886, Advertising 01-278 6552

COMPUTER AND VIDEO GAMES POSTAL SUBSCRIPTION SERVICE. By using the special Postal Subscription Service, copies of COMPUTER AND VIDEO GAMES can be mailed direct from our offices each month to any address throughout the world. All subscription applications should be sent for processing to COMPUTER AND VIDEO GAMES (Subscription Department), Competition House, Farmdon Road, Market Harborough, Leicestershire. All orders should include the appropriate remittance made payable to COMPUTER AND VIDEO GAMES. Annual subscription rates (12 issues): UK and Eire £10.00 Overseas surface mail £12.00 Airmail Europe £20.00 Additional service information including individual overseas airmail rates available upon request. Circulation Department: EMAP National Publications. Published and distributed by EMAP National Publications Ltd. Printed by Eden Fisher (Southend) Limited.
 ISSN 0261 3697.

Cover: J. M. W. Turner (The Tate Gallery) London. **Next issue:** April 16th



Chromasonic Hall of Fame No.4
THE 'MACHINE CODE PROGRAMMER'. THIS SPECIES OF COMPUTER BUFF IS DIFFICULT TO SPOT, AS NORMAL HABITAT IS ILL-LIT GARRET ABOVE CHIPPY, WHICH HE NEVER LEAVES. HAS NO CONCEPT OF TIME. DOES NOT EAT. PICTURE SHOWS EXAMPLE OF SPECIES AT SLEEP. BODILY MOVEMENT CONFINED TO BELOW THE WRIST. OCCASIONALLY IGNITES FRESH KING-SIZE. THIS SPECIES HAS BEEN KNOW TO UTTER SHORT MEANINGLESS PHRASES OF SPEECH. 64K MEMORY.
WE'LL FIT YOU OUT
AT CHROMASONIC, WE HAVE EXPERIENCE IN GENTLY SUGGESTING THE RIGHT EQUIPMENT, AND TENDERLY ADVISING EVEN THE MOST FRAGILE OF BREEDS ON THE SYSTEM THAT WILL SUIT, SO IF THE LIGHT IS NOT TOO BRIGHT FOR YOUR DELICATE RETINA, PLEASE CALL ON US, WE CAN FIT YOU OUT, AND PUT YOU BACK ON THE RIGHT BUS HOME. AMONG STOCKED ITEMS WE HAVE....
VIC20 NEW LOW PRICE £129
VIC PRINTER £212.00
80 Characters per line, 30 Characters per sec., Tractor Feed Dot matrix printer.
VIC SINGLE FLOPPY DISK
OUR PRICE £286
174K Byte Storage
Direct Interface to VIC
Compatibility with
VIC CASSETTE DECK £39.00
Free cassette with 6 programs supplied
DRAGON 32
* 9 Colours
* 32K RAM memory as standard, expandable to 64K
* Extended Microsoft colour basic as standard
* Typewriter Keyboard
* 6809E CPU
* Advance sound feature
* 32 Columns x16 Lines
OUR PRICE £189
FREE 'Basic' training manual supplied
The 64 from commodore
64K RAM
16-colour display
music synthesiser
3-D effect
OUR PRICE £343
COLOUR GENIE
EG 2000
PAL VERSION
* Typewriter Keyboard
* 8 colours
* Extended Microsoft colour basic standard
* 16K RAM standard expandable to 32K
* Serial and Parallel I/O Ports * CPU: Z80A/2.2 MHz
* 3 Sound Channels * 40 Columns x 24 Lines
OUR PRICE £199
CHROMASONIC
PERSONAL COMPUTERS
48 JUNCTION RD, ARCHWAY, LONDON N19 5RD Telex 22568
BBC MODEL A & B
GP100A SEIKOSHA
FULL GRAPHICS CAPABILITY
CENTRONICS PARALLEL INTERFACE
OUR PRICE £217
AUTHORISED DEALER
Full Technical Support and After-Sales Service
Large list of Software and Peripherals
ACCESSORIES FOR YOUR VIC20
Super Expander High Resolution Cartridge £31.00
Programmers Aid Cartridge £28.00
Machine code Monitor Cartridge £28.00
8K RAM Cartridge £39.00 16K RAM Cartridge £59.00
TELEPHONE
01-263 9493/5
Chromasonic "Hall of Fame Album" Send 75p for your collector's Album. Start by cutting out the cartoon on this ad, one in a series of 50. We will send you the cartoon of your choice with every order, to help you build up this exclusive 1983 collection. Prize for 1st full album presented to us!!
CV4
I am interested in a home computer.
Please send me further details
☐ VIC 20 ☐ DRAGON 32 ☐ COLOUR GENIE
☐ ADD-ONS ☐ SOFTWARE ☐ ....
TERMS OF BUSINESS. All prices inc 15% VAT
Delivery charged at Cost. Prices valid for cover date of this mag
Access and Barclaycard orders welcome
Buy it with Access
VISA
☐ Please send me "Hall of Fame Album". I enclose 75p.
NAME: ....
ADDRESS ....

BEEB GETS THE GAMING BUG

Computer gaming is making its first impression on television this month in a Saturday morning programme which is taking over the Saturday Super Store slot.

Get Set (for Summer) will be featuring computer games throughout its 16 week series which runs up until the school summer holidays.

The programme aims to give practical ideas on new hobbies, sports and other activities to try out or take up during the summer holiday. And series producer Tony Harrison is a home computer owner keen to demonstrate the new world which a microcomputer can open up.

The first programme in the series goes out on April 2nd and features not only home computers but also TV games centres and arcade machines.

And the series is also unique in having a microcomputer-controlled system of "cue-ing" programme presenters Mark Curry and newcomer Deborah Appleby. This system runs on a BBC Microcomputer and was written by the producer's son Daniel.

The presenters will be able to look up during the programme to check on how much time is left on any particular interview or demonstration. Events during the programme can be reshuffled on the screen to change the order of programme features or fit in new items.

Computer & Video Games will be helping out during the series and the slot on Saturday April 16th will be of particular interest to all computer games programmers.



As home computing comes of age throughout Britain it is ironic to think that 1983 may go down as the Year of the Home Video Game.

Our Video Screens section has already been full of the rich promise of new games and new machines which should be with us before 1983 ends.

The Colecovision launch should (lawsuits permitting) provide the industry with some much-needed compatibility when it adds the Atari and Intellivision expansion modules.

Intellivision's manufacturers, Mattel, are opening up the software market by bringing out their top games in Atari format, on the M Network series.

In our May issue, Eugene Lacey takes a look at the new way to cut the cost of home video gaming — by renting the cartridges rather than paying around £20 plus to find out you've tired of the game after the first couple of days.

Several companies have sprung up offering cartridges for hire and the latest move is for public libraries to open up a software section too.

Arcade games players will have another chance to enter our Best Arcade Player Championship and we'll be printing up some scores to aim at on different machines in our record breakers section.

But although the records give some idea of what is possible, remember that they still have to reproduce those scores and get them signed by the arcade owner in the next three months.



Mad Max is the most interesting listing we've had for some time. Our reviewer rates it as the best driving game he has ever come across on the Sharp and the course certainly looks to include some fascinating features. So rev up and get ready to drive off into the future with Mad Max in May.

Add a new dimension to gobbling games with the Ghost's Revenge by Gareth Jones. This is a novel two-player extravaganza for the Dragon 32 which could spell the end of Pacmen as we know them!

One player tries to munch his way out of trouble. the other takes control of the ghostly pursuers.

Then there's Tank Battle for the BBC B and an arcade-style attraction called Grow-Worm wriggling its way out of the Atari 400/800.

No. 1 Best Sellers for Your Spectrum! *

HOBBIT and PENETRATOR

"A Lot of Fun" Computing Today

STATE OF THE ART GAME

VISIT MIDDLE EARTH

Experience the fantasy of J. R. Tolkein's "HOBBIT" on your 48K Spectrum. Danger, adventure and excitement are all part of it in words and graphics, but it is you who must solve the problems. Special features never seen before. THE HOBBIT is the program everyone is talking about. £14.95.

CAN YOU SURVIVE PENETRATOR?

PENETRATOR is the most amazing and sophisticated arcade game yet devised for the 48K Spectrum. Features include training mode, unique customizing, superior graphics, excellent sound and more! £6.95.

MELBOURNE HOUSE PUBLISHERS Orders to: 131 Trafalgar Road, Greenwich, London SE10

Correspondence to: Glebe Cottage, Station Road, Cheddington, Leighton Buzzard, BEDS LU7 7NA

Trade enquiries welcome.

☐ Please send me your free catalogue.

Please send me:

SPECTRUM Books

☐ Understanding Your Spectrum £7.95
☐ Spectrum Machine Language For The Absolute Beginner £6.95
☐ Over The Spectrum £6.95
☐ The Complete Spectrum ROM Disassembly £9.95
☐ Spectrum Hardware Manual £5.95

16K SPECTRUM Cassettes

☐ Over The Spectrum No. 1 £5.95
☐ Over The Spectrum No. 2 £5.95
☐ Over The Spectrum No. 3 £5.95
☐ Programs from Spectrum Machine Language Book £5.95

48K SPECTRUM

☐ Penetrator £6.95
☐ The Hobbit £14.95

All Melbourne House cassette software is unconditionally guaranteed against malfunction.

Access orders can be telephoned through on our 24-hour ansafone (01) 858 7397.

Please add 80p for post and pack £ .80

TOTAL £

I enclose my cheque/money order for £

Please debit my Access card No. Expiry date Signature

Name Address

Postcode

CVG 4

MELBOURNE HOUSE PUBLISHERS



*No. 1 and 2 best selling Spectrum programs four weeks running in *Personal Computing Weekly* charts.



Please drop us a line at: Computer and Video Games, EMAP, Durrant House, 8 Herbal Hill, London EC1R 5JB.

TRADE WITH ENEMIES

Dear Sir,
If at the start of a turn in Seventh Empire you are in an empire at war with a neighbour can you Move to a neutral neighbour and then Trade with the previous enemy in your second movement phase?
Roy Rogers,
Crockenhill,
Kent.
Editor's reply: No. As you still are considered to belong to the empire whose star you began the turn at, such a Trade would be illegal. But keep trying Roy!

PLUNDERING FOR PROFIT

Dear Sir,
I have calculated my score to be just outside the Top 10 Seventh Empire commanders you published last issue and I'm kicking myself for not following Mr Tactico's example and Plundering rather than Cargo-ing.

My two Cargo moves were both robbed of profit by greedy pirates and I wonder if there's any profit to be had in ever travelling by Gateway except on a Plunder mission. Is this a valid flaw in Seventh Empire? Please comment.

Still, I can congratulate myself on some good trading and I am enjoying a marvellous sense of anticipation awaiting next month's results.
D. Andrews,
Knightsfield,
Welwyn Garden City.
Editor's reply: Seventh Empire tactics will evolve over the next few months Mr Andrews and players will change from Cargo to Plundering, as I suspect that you have done. And when so many people are Plundering Gateway routes, there will be a reluctance to Cargo and the pirates profits will plummet.

In our first go, Cargo-shippers actually faired better than the Plunderers and many of our top 10 accumulated profits on a number of Cargoes.

Much of the excitement of The Seventh Empire will be in seeing how the winners have applied their tactical thinking to the number of players in the game. Very soon Attacks may prove a big profit booster as players learn to spot isolated star systems vulnerable to a large influx of Attackers.



PROBLEMS IN THE EMPIRE

Dear Sir,
Several problems have arisen with the Seventh Empire and I feel they can be best answered in writing.

In working out profit through Trade, do you use: the issue with the order sheet you send in, the following issue or both issues?

To work out Plunder and Cargo profit you need to know the number of fleets using this route.

How do you discover this?

How do you find out the Battle Bonus?
J. A. Howes,
South Croft,
St Johns,
Worcester.
Editor's reply: Trade profit is worked out by comparing the trade index of each star in the issue following the one you sent your orders in for. So the March move is calculated by the figures on April's Galactic Map.

Plunder and Cargo is worked out by checking the Gateway Route Table. Find the star you moved from in the vertical column and move across until you reach the star you moved to horizontally. The figure there gives profits for either merchant or pirate. Battle Bonuses are given in the Battle Reports section.

WHAT'S IN A PEEK?

Dear Sir,
I am a beginner in the world of computers. I would like to know the equivalent of (PEEK 16398+PEEK 16399) on the BBC machine, it is in the Mole program (Jan 1982) for the ZX81).

What are graphic characters? Has the BBC machine any?
Mr S. Alg,
Fulham,
London.
Editor's reply: PEEK 16398+256*PEEK 16399 in ZX81 Basic gives you the address of the PRINT position in the display file. This is not necessary on the BBC m/c as it has a memory mapped screen. So . . . it is not possible to easily translate this to BBC Basic.

The BBC has 32 user defined graphics characters. Again, read page 170 of the manual for a full explanation of how to use the VDU23 command. Needless to say, it is non-standard!

STAR WARS HIT HOME

Dear Sir,
If a Seventh Empire fleet Moves or Trades between two friendly stars on its first movement phase, can it Move or Trade with a star at war with the star it has arrived at in the second movement phase?
Ron Murch,
Downs Barn,
Milton Keynes.
Editor's reply: In neither movement phase is a fleet allowed to Trade or Move to a star at war with any star it has left or visited during that turn.

DON'T QUIBBLE OVER BBC

Dear Sir,
I write in reply to a letter by Alan McAuley which appeared in your December issue.

I would like to know to what application a ZX Spectrum can be put that a BBC machine cannot cope with.

I admit that the model A is expensive, but the BBC machine was designed with expansions in mind. This means that it has a very wide range of practical applications.

I personally have a BBC model B and although I haven't seen the Spectrum, I have seen the ZX81 which doesn't even come close.

In any case to say that Sinclair machines are the best micros on the market is ludicrous, they are the cheapest, and from what I have seen you get what you pay for.

This is not a quibble concerning the Spectrum and BBC machines. I know which is best and this is reflected in the machine I have bought.
David Hetherington,
London.

ANIROG

KRAZY KONG . . .



An expanded screen presentation with rolling barrels, hammer, fireballs, lifts, handbags and umbrellas as you try to rescue the Damsel Kong has abducted. Spectacular collapse of Kong's lair in fourth screen. Uses all 21K of your expanded Vic for this 100% m/c thriller. Complete with high score table. K.B./J.S. 16K £7.90

XENO II

Gorf style 100% m/c space adventure with four action packed games. All games use expanded screens and large graphics. Fast moving Robotron. Ultra fast Space Invaders give you the most spectacular Vic 20 game yet.
J.S. 16K £7.90

PHARAOH'S TOMB

A multi screen graphical adventure to test your skills. Can you avoid the traps set by the Ancient Egyptians and enter the magic triangle.
K.B. 16K £6.00

ZOK'S KINGDOM

Dare you enter Zok's castle, a distant relative of Dracula. A multi-screen graphical adventure to test agility of mind and action.
K.B. 16K £6.00

DRACULA

Find Dracula before he rises and drive a stake through his heart in this multi-screen graphical adventure.
K.B. 3K £6.00

FOR THE UNEXPANDED VIC 20 . . . £6.00

FROGRUN

All m/c game with brilliant graphics and sound effects with features like busy highway, snakes, crocodiles and lady frogs.
K.B./J.S.

CRAWLER

All m/c version of Centipede. Homing spider, mushroom laying flea and multi-direction travel makes this game fast and furious.
J.S.

CAVERN FIGHTER

100% m/c version of Scramble. Four sectors with missile launchers, ramming ships, fuel dumps and fireballs.
K.B./J.S.

SEVEN PROGS (Vol 1)

Hi-res games for the whole family. Othello, Bomber, Slalom, Bounce Out, Lunar Docker, Memory and Snake.
K.B.

SEVEN PROGS (Vol 2)

Dare Devil, Goblin's Gold, Ghosts, Grand Prix, Breakout, Cobra and Minefield.
K.B.

TINY TOTS SEVEN

Super Snap, Simon, O's and X's, Bomber, Word Jumble, Duch Shoot and Mad Drivers.
K.B.

DEALER ENQUIRIES WELCOME. GENEROUS DISCOUNTS

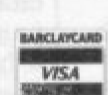
SOFTWARE WRITERS. We are looking for top class writers to join our growing software team. If you have written a quality game for Vic 20, Spectrum, Dragon 32, Oric 1 or Commodore 64, then contact us.
We pay top royalties for accepted programmes.

SPECTRUM — VIC 20 — ZX81 — DRAGON 32

Huge selection of software. Nearly all the software advertised here available post free. Pick and mix facility. Order for yourself and friends and get huge discounts. Send S.A.E. for catalogue. 5 tapes 10%. 10 tapes 15%. 20 tapes or more 20%.

Payment by cheque, P.O., Access/Visa.





**ANIROG COMPUTERS,
26 BALCOMBE GARDENS,
HORLEY, SURREY.**

24 HR. Credit Card Sales.
Horley (02934) 6083

ENQUIRIES Horley (02934) 2007/6083



MAILBAG



IMPERIAL LOSERS . . .

Dear Sir,
If, in the Seventh Empire, a person making negative profit ends his turn on the same star as an Imperial Ship, will he lose twice as much or half as much? And how do I control an Imperial Ship?
Stephen Loughran,
Agamemnon Road,
London,
NW6

Editor's reply: He loses twice as much. Stephen, which means that Imperial Ships can be used to inflict hard times on rivals, as well as boosting your own profits.

It makes these ships a double-edged weapon.

A ship can be controlled by putting all your ships into stars belonging to one empire and gambling that you will be the richest player to have tried to wrest control of that empire's ship.

SKILL AND THE DRAGON

Dear Sir,
Your correspondent in the February issue may be interested to know that I have tried the Tandy game Project Nebula and Chess on my Dragon 32.

The first works perfectly and the second only runs in skill level eight, the most difficult.

This is because the Dragon does not respond to the "L" command which is supposed to select the skill level. Has any reader managed to solve this problem?
C. A. Sanders,
Guiseley,
Leeds.

DEBUGGING A SPACE LASER

Dear Sir,
In the November issue of *Computer and Video Games* you featured a game for the T.I. Space Laser.

Who did it this time? Mal Function, T-Hitch, Snag Jnr or Screaming Foul Up?

The bugs I found and debugged lines are:-

```
420  CALL CHAR (112,
"0000163066301800")
1100 PRINT "GAME OVER"
1170 PRINT "YOUR SCORE
IS"&STR$(SC)
1260 GOTO 620
```

Line 1470 should be deleted.

```
1510 CALL HCHAR (24, 2, 32,
32)
```

There were bugs in lines 1530, 1570, and 1880. If there are any other bugs could you print the solution to them.

Also could you print a Defender type program. I am hoping to make a contribution to your pages.

PS. Hungarian Hex was a real mind bender!
A. Howarth,
Wigan,
Lancashire.

COMPUTER IS VERY RUDE!

Dear sir,
I have managed to use a telescope properly and the reward was a terrific view of what looks like a snake in the grass but I can't use anything else that the Pi-man gives me. And my computer is rude to me for trying. Help!
Gareth Mulgrave,
Nottingham.

Editor's reply: Do not ignore a single word of the text or any of the music.

The uses of the Pi-man's gifts are quite logical.

If you do silly things like trying to use your Deaf Aid in the Waste Disposal Unit, or use your Hang-glider in the Canal, then we are not surprised that your computer is losing patience!



COMMANDING THOSE STICKS

Dear Sir,
Your February issue of *Computer and Video Games* included a Missile Command game for the Dragon which I have amended for joysticks.

First delete lines 340 and 350 and change lines 330, 360, 370, 380, 430, 440 and 500 to:

```
330 Z=JOYSTK(0):ZZ=JOYSTK
(1):IF Z>10 AND Z<50 and ZZ
>10 and ZZ<50 THEN 360
360 IF Z>50 THEN
    A=A+5:IF A>255 THEN
    A=255
370 IF Z<10 THEN
    A=A-5:IF A<0 THEN
    A=0
380 IF ZZ>50 THEN B=B+5:
    IF B>170 THEN B=170
430 IF ZZ<10 THEN B=B15:
    IF B<10 THEN B=10
440 F=PEEK(65280):IF F =
    126 OR F=254 THEN F
    =RND(3):GOTO 500
500 U=F:IF M(U)=0 THEN
    450
```

The game now uses the right joystick. With the above amendments I have found the game easier to play and, to date, my highest score is 10,350.
Richard White,
Rotherham,
S. Yorkshire

IS THIS A RECORD?

Dear Sir,
We have currently solved/got maximum pbints in the following adventures for the Video Genie/TRS-80: Adventureland, Pyramid 2000, Pirate's Cove, Raaka-Tu, Mission Impossible, Lords of Karma, Voodoo Castle, Dog Star, The Count, Moonbase Gamma, Strange Odyssey, Lord's Keep, Mystery Fun House, Asylum, Curse of Crowley Manor, Asylum II, Golden Baton, and we are currently working on Pyramid of Doom.

Is this a record?

P.S. If you think Asylum is difficult, just try Asylum II!

P.P.S. If *C&VG* wants hints, we might consider payment — not a year's subscription, please!

P.P.P.S. If you ever consider replacing your Adventureland columnist, please let us know!
Simon French and
Craig Heath,
Warwick.

Keith Campbell replies: The Editor rolled about the floor with uncontrollable mirth when he read your letter! The thought of getting rid of me tickled him no end. Then Sue mentioned the bit about payment, and he quickly recovered and brewed himself a cup of strong coffee!

I pointed out I had solved Savage Island!! He said "Part 2?" and there was a deathly hush.

P.S. I might be mad, but I'm not stupid!

P.P.S. You'd be better off with the year's subscription!

P.P.P.S. I've a wife, three kids, a micro and a Tax Inspector to support — so hands off!!

MISSING LINX . . .

Dear Sir,
I have been buying your magazine regularly but so far I have not come across any games or educational programs for my new computer which is the Lynx. Has anyone out there got any programs for the Lynx? If so I'd love to see them!
John Noden,
Truro,
Cornwall.

GENIE BEATS THE GLUTTON

Dear Sir,
I write to thank you for your note about the Glutton program and hasten to let you know I have stumbled across the trouble!

The Genie I has a ROM which is enabled by a SYSTEM call which amongst other things cures the keyboard bounce, provides a M/C monitor etc.

By *NOT* enabling this: ROM the program RUNS ok and indeed two other programs I have had trouble with also run properly.

There is nothing in the Genie manual about this so I hope this will help other Genie users who have encountered the problem.
Lionel R. Howe,
Burton-on-Trent.

COMPETITION COMPETITION COMPETI

CALLING ALL ARCADE CHAMPIONS

Have you ever been beyond the Scramble maze? Or seen the treasures of Tutankahmun? Perhaps you're a regular destroyer of the Zaxxon robot or a veteran of the fourth Donkey Kong screen.

If you're one of those intrepid few, for whom the arcade denizens hold no terror, then you should put your talents on show at our Best Arcade Player finals.

The championships start right here at the bottom of this page with a form to fill in your top score achieved on three machines.

These forms will be appearing in Computer & Video Games for the next two months and by June we should have some idea of who are the best arcade players around.

Taitel Electronics, who have brought many of the current arcade favourites into the UK are helping us to organise a grand finals day with a top personality who also enjoys tackling electronic adversaries.

Then we will invite all the top scorers on the most popular machines — which will be judged purely on your response — along to show us what they can do and the best of these will be crowned the Best Arcade Player.

A table-top arcade game is the prize for the winner and all the finalists will get an expenses-paid trip down to London to take part and probably see some of the latest arcade games around too.

Last year the finalists were joined by the national press and Steve Davis, the top snooker star who also proved himself a dab hand at arcade games by taking on our champ Peter Edmonds at the game of Qix and beating him.

OK so your name features all over the high score charts in the local arcade.

Well this form could take you into the big league with a crack at the Best Arcade Player title for 1983.

Simply cut it out and take it along to the local pub or arcade where your favourite machine lurks, put on the best score you can and ask the arcade manager or pub owner to witness the score on this form.

We'll need the name of the game, your score, where you achieved it and a date — plus your name and address of course.

But don't put all your eggs in one basket. If there's another machine you fancy your chances on, use the next category to fill in your best score on that too.

And there's a place for a third machine too. Your chances of reaching the final may increase with the number of different games you enter on. Should you produce a bad score, just try again.

You may also find the leaflets on display in your local arcade. If you notch up a good score after forgetting to bring the leaflet out, ask the arcade manager whether he's got some you could use.

The entries must be back with us by June 13th and should be sent to: Best Arcade Player, Computer & Video Games, Durrant House, 8 Herbal Hill, London EC1R 5JB.

Please enter the following scores in your 1983 Video Games Championships

My high score is: ....
It was scored on a: .... machine
Date: ....
The manager of the pub/arcade who witnessed my score is: ....
His signature: ....
Name & address of pub/arcade: ....

My high score is: ....
It was scored on a: .... machine
Date: ....
The manager of the pub/arcade who witnessed my score is: ....
His signature: ....
Name & address of pub/arcade: ....

My high score is: ....
It was scored on a: .... machine
Date: ....
The manager of the pub/arcade who witnessed my score is: ....
His signature: ....
Name & address of pub/arcade: ....

My name is: ....
Address: ....
Tel: ....

COMPETITION COMPETITION COMPETI



Andrew Muir receives his prize at Bally U.K.'s headquarters

MEET OUR PINBALL WINNER!

Bally's American team of top pinball designers are currently working out whether Alcatraz is likely to escape from their workshops.

Alcatraz is the brainchild of Andrew Muir of Grove Road, Norwich, who won the Bally Pinball design competition we featured in our September issue.

Andrew put the emphasis on skill with a barrier of drop targets which have to be knocked down to begin your escape path in an upper playfield.

Players are also given the chance to spell out "A-L-C-A-T-R-A-Z" in the lower playfield. His game also featured a captured ball and trying to get a ball through a moving hole.

The Bally judges were particularly impressed with the care and pinball knowledge Andrew displayed in his design.

Bally's US marketing vice-president Tom Nieman, was so impressed with the high standard of the entry he split the competition into two and awarded a second prize in the video game category to Ian Boffin of Lych Way, Woking, for his Jaws game.

Dave Adams of Bally UK entertained both winners at his Wembley HQ last month and presented Ian with his Intellivision games centre and Andrew with a super Vector pintable to set up in his home in Norwich.

An additional bonus for Andrew came in the shape of The Pinball Owners' Association granting him free membership. And it turns out that our winner will be member number 1,000!

Runners-up in the Pinball design class: Alexander Martin of Hamilton Crescent, Brentwood and David Payne, of Seaton Gardens, Ruislip.

In the video games design class Ian Farrelly of Quarry Road, Portishead came second and third equal were Peter King, of Church Lane, Walthamstow and Ian Rainford of Peel Hall, Wythenshawe. Free subscriptions to *C&VG* are on their way to this lucky few.

RED, WHITE AND BLUE POSER

Could you help Farmer Nure with his blooming problem from our March issue?

If you worked out the plant's next bloom then you may find a Hungarian Ring Puzzle, destined to cause you further sleepless nights, on its way to you.

If not, this is the way to work out the plant's next blossom.

Each petal has "neighbours" with which it shares an edge line in our drawing.

For any petal, if an even number of neighbours also have its *own* colour then it keeps that colour in the next generation (yes, O is even!).

If an odd number of neighbours have its colour then it changes in the next generation in the sequence Blue to Red to White to Blue . . .

CONFESSIONS OF A BUG

We may currently be micro-less but we're far from powerless. I personally claim responsibility for kidnapping the P9(J) from the end of line 2630 of the Book of Games' World Cup Manager program.

Nibblers fans with a Vic-20 can have their listing (January) improved by changing a few PEEKs and POKEs. A letter or a call to the C&VG offices will result in a copy of the necessary changes being put in the post.

Defuse gave Texas owners a difficult time after Screaming Foul-up ran riot in it. The following lines should be added or changed:

```
1110 R=RT
1120 C=CT
1130 CALL HCHAR(R,C,96)
700 C=RAN(28)+2
2590 CALL HCHAR(R,C+I,ASC
(SEG$,1+1,1)))
```

An anonymous fleet transmission was intercepted this month from the 15 players still wrapped up in the C&VG special Starweb game. Obviously a Berserker, keen not to give away his identity. Still we published it as it serves as a timely reflection on the poverty which still exists in points terms in some sectors of the galaxy.

Since I started my struggle for galactic domination it has got ever more complicated.

No longer is there an abundance of undiscovered worlds, easily captured or destroyed by my rampaging fleets. Not every planet is hard won by diplomacy or battle.

As a Berserker, I'm inclined to blow up planets, decimate populations and fill the universe with my robotic hordes. However, I've done very little of this concentrating upon creating an empire. Now that further expansion is difficult, I can just kill all my people and gain points quickly.

Doing this, I don't need any outside interference so I have tried to stay at peace with everyone. I am trading with a merchant and an artifact collector and so far, have met only two hostile players.

One of these, an apostle, refuses to answer any of my messages while an extremely insolent space pirate has recently captured one of my fleets. Unless he returns it, I will start a holy war, hoping my many allies will join in to destroy him.

Still the main problem is my unbelievably low galactic takeover rating. Just creeping over 100 points while other people have a thousand.

spectrum

NEWS from SPECTRUM

ATARI 800

This **proven and tested** micro is now **UPGRADED to 48K RAM** and there's **no increase in price either** which must make it **about the best value around.** See our ad. for further details.

ATARI 400

Now **REDUCED** by a **MASSIVE** £39 to an **incredible price of only £159.95** from **Spectrum.**

SINCLAIR ZX SPECTRUM

We have now added the super **SINCLAIR ZX SPECTRUM** 16K and 48K Models to our range – check our ad. for further details.

NEW SPECTRUM MEMBERS

Check our address page! – there are many new SPECTRUM dealers throughout the UK so there's a good chance there'll be a SPECTRUM centre very near you.

STOCKS

The general stock situation has now improved and you'll find that most **SPECTRUM** centres will be able to supply you **immediately** and at **super LOW prices too!**

INTRODUCING SPECTRUM FACTS!

Next to many of our offers, you'll find a few lines tagged SPECTRUM FACTS. We pride ourselves on providing **you,** the customer, with a **genuine service** as well as super LOW prices, and we want you to know that when you buy from a SPECTRUM dealer, you'll get **exactly the right Micro for your needs. SO LOOK OUT FOR YOUR SPECTRUM FACTS!**

After Sales care

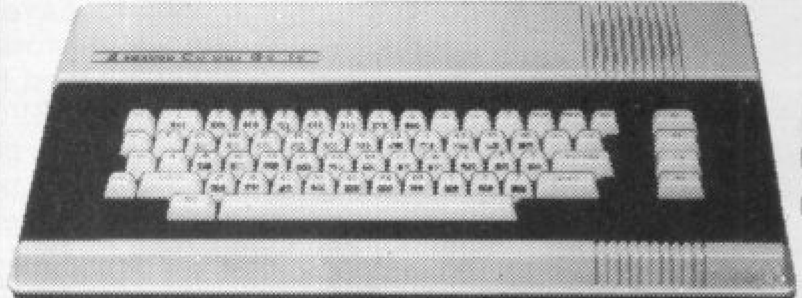
SPECTRUM service centres will ensure that should your machine 'go-down' **we will get it running again as quickly as possible.** We also offer **extended warranties** at reasonable prices too! – ask your **SPECTRUM HOME COMPUTER CENTRE** for full details.

COMPUTER DEALERS!

(or prospective Computer Dealers!) If you would like to know more about becoming a **SPECTRUM APPOINTED DEALER** on an **exclusive area basis,** please write to **MIKE STERN, Spectrum (U.K.) Ltd., Burrowfield, Welwyn Garden City, Herts.**

COLOUR GENIE

A truly reliable micro and highly recommended by Spectrum.



The new **COLOUR GENIE** features powerful and sophisticated **COLOUR GRAPHICS,** allowing you to create full 8-colour Games, Diagrams and Charts quickly and simply.

At its low **SPECTRUM** price, the Colour Genie is amazingly versatile – its **Powerful 16K RAM memory** (expandable internally to 32K) means **FULL COLOUR video games** and **POWERFUL COMPUTING** with a full range of inexpensive accessories: **16K RAM pack, Joysticks** for **TV games, Light Pen, Disk Drive** and a **Printer.**

But that's not all – the Colour Genie also features a **16K ROM Memory** with **128 Upper and Lower case Colour Graphics Charatters** already stored, plus **sound,** a professional **typewriter keyboard.**

In use, it's as straightforward as any, thanks to the use of **BASIC** language and direct keyboard accessed **colour commands.**

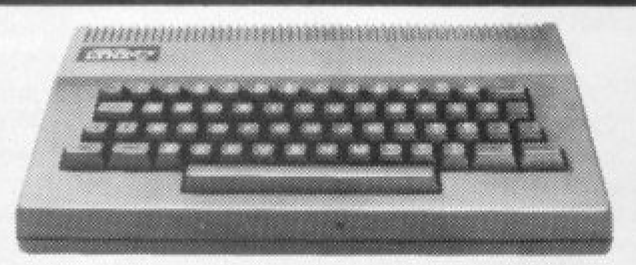
The superb Colour Genie is at **SPECTRUM** now – check it out and see the Genius at work!

Spectrum LOW Price £224.48 Inc.VAT

COLOUR GENIE ACCESSORIES	
Joysticks	£49.49
16K RAM	£38.50
Printer Interface	£39.95
VISCOUNT Teach yourself Colour Genie BASIC	£6.95

SPECTRUM FACTS	
Maximum user RAM	14,200 Bytes (approx)
Text Screen	24 x 40
High Resolution	160 x 96
Cassette Lead	Included

LYNX



Just look at this **super new LYNX Micro** – an **incredible** 16K + 32K video ram and that's **expandable** up to or beyond **96K.** For just **£225.00 INCLUDING VAT** the **LYNX is exceptionally versatile.** All **LYNX's** 'add-on' connections are **standard types.** The **high definition colour graphics** make it a **top-value choice** for the **home or office** (with expansion, the **LYNX** can become an 80 characters-per-line word processor!) Take a look at the **LYNX** – a **memorable bargain** from **SPECTRUM.** But please phone to check stock position **before making a journey** as this new machine is bound to be in **great demand.**

Spectrum LOW Price £225.00

VISCOUNT – Teach yourself LYNX BASIC £6.95

SPECTRUM FACTS	
Maximum user RAM	13,700 Bytes (approx)
Text Screen	24 x 40
High Resolution	265 x 248
Cassette Lead	Included

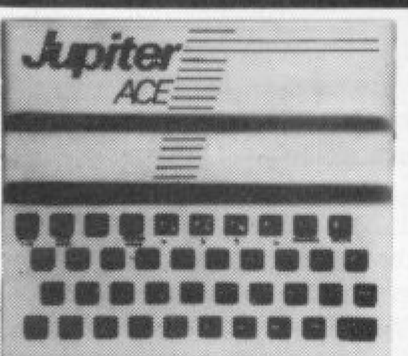
ORIC-1

A superbly designed and engineered micro and great value-for-money from **SPECTRUM.** Offering **48K RAM Colour** – (8 foreground and 8 background can be displayed at same time) **High resolution graphics User definable Graphics. Full sound** (6 octaves of controllable sound.) **Easy to use keyboard** with **moving keys. Standard Centronics parallel interface allows** easy connection to a wide range range of printers etc.

Spectrum LOW Price £169.95 Inc. VAT

SPECTRUM FACTS	
Maximum user RAM	47,870 Bytes
Text Screen	28 x 40
High Resolution	240 x 200
Cassette Lead	Included

JUPITER ACE



Outstanding value-for-money! The **JUPITER ACE** uses easy to understand **FORTH** language. **Connects to your own TV. 3K RAM expandable to 19K. Full moving keyboard** with auto repeat and caps lock. **Full sound and chunky graphics.** If you've wanted to learn an impressive Language then this is the machine for you.

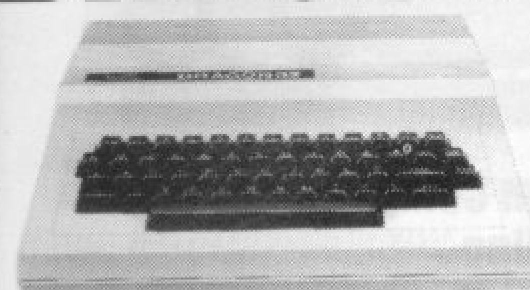
Spectrum LOW price £89.95 Inc VAT £76.22 ex vat

SPECTRUM FACTS
Maximum user RAM 1,000 Bytes approx.

Not all stores carry every advertised item, please phone before making a journey – Prices correct at time of going to press E. & O.E.

HURRY! Limited stocks only-

DRAGON



Unbelievable value at only £199.95 from **SPECTRUM**! British built and designed it's one of the **most impressive micros** to appear for quite some time. Extensive facilities include highly advanced colour graphics. Just look at this top specification: Powerful standard 32K RAM (expandable to 64K Bytes). ■ 9 Colour, 5 resolution Display. ■ Extended Microsoft colour BASIC (as standard). ■ Advanced sound with 5 octaves – 255 tones. ■ Professional style editing, e.g. extract line, auto find reinsert. ■ Professional quality keyboard. ■ Centronics Paralled printer interface. ■ Serious programmer/user – the BASIC on this machine is similar to that found on machines costing 3 times the price! ■ Uses almost any cassette recorder. ■ Standard file handling ON TAPE.

Spectrum LOW price £199.95 INC. VAT

SPECTRUM FACTS

Maximum user RAM	29,679 Bytes
Text Screen	16 x 32
High Resolution	256 x 192
Cassette Lead	Included

	EX VAT	INC VAT
ACCESSORIES		
Joysticks (pair)	£17.35	£19.95
Cassette Lead	£2.35	£2.70
CARTRIDGES		
Beserk	£17.35	£19.95
Cosmic Invaders	£17.35	£19.95
Meteroids	£17.35	£19.95
Ghost Attack	£21.70	£24.95
Cave Hunter	£17.35	£19.95
Starship Chamelion	£17.35	£19.95
CASSETTES		
Calixo Island	£6.91	£7.95
Graphic Animator	£6.91	£7.95
Quest	£6.91	£7.95
Madness and the Minotaur	£6.91	£7.95
Examples from Dragon Manual	£6.91	£7.95
Personal Finance	£6.91	£7.95
Dragon Mountain	£6.91	£7.95
Typing Tutor	£6.91	£7.95
Black Sanctum	£6.91	£7.95

VISCOUNT Software for DRAGON Teach yourself Dragon Basic . . £6.95

ATARI 800

Now with 48K RAM and still at the same LOW price!

Now this proven and tested machine has been upgraded to a massive **48K RAM** and it's still at the amazing **LOW** price of **£399.99** from **SPECTRUM**. It's an ideal Home Micro for graphics, educational and personal finance etc, use and it will take you from learning up to small business use. You can add printers, program recorders, disk drives and more, to expand your micro as and when you want, to suit your needs. So if you're looking for a top-of-the-line micro you must see the **ATARI 800** with **48K** at **SPECTRUM – NOW!**

Spectrum LOW Price £399.99 INC. V.A.T.

SPECTRUM FACTS

Maximum user RAM	37,899 Bytes
Text Screen	24 × 40
High Resolution	320 × 192
Cassette Lead	Needs own Recorder

ATARI 400

16K RAM



NOW ONLY £159.95 INC. VAT

BASIC cartridge extra £39.99 inc. VAT (£34.77 ex. VAT)

SPECTRUM FACTS

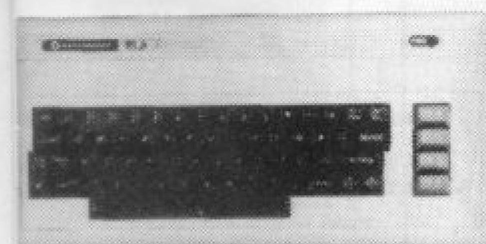
Maximum user RAM	13,323 Bytes (with basic Cartridge)
Text Screen	24 × 40
High Resolution	320 × 192
Cassette Lead	Needs own Recorder

ATARI DISK DRIVE £299.00 INC. VAT

ACCESSORIES, BOOK & GAMES for ATARI

	INC VAT
Accessories	
Thermal Printer	£198.95
16K RAM Pack	£65.00
400 Keyboard	£59.95
32K RAM board (400/800)	£75.00
48K RAM board (400/800)	£99.00
Paddles (Pair)	£13.99
Joysticks (Pair)	£13.99
I/O Cable	£12.99
Printer Cable	£28.50
Monitor Cable	£25.00
Thermal Paper	£4.00
Pointmaster Joysticks	£14.95
Quickshot Joysticks	£14.95
Keyboard for Atari 400	£00.00
Books & Manuals	
Wiley Manual	No VAT
Basic Reference Manual	No VAT
DOS. 2 Manual	No VAT
Operating System Listing	No VAT
DOS. Utilities Listing	No VAT
Home Computer Programs – Home/Office	
Word Processor (Disk)	£99.99
Mortgage & Loan	£14.99
Microsoft Basic (Diskette)	£59.99
Home Study (Cassette except where stated)	
INV. to programming 1	£19.99
INV. to programming 2	£22.99
INV. to programming 3	£22.99
Conversational French	£39.99
Conversational German	£39.99
Conversational Italian	£39.99
Conversational Spanish	£39.99
European Countries & Caps	£14.99
Hangman	£14.99
Kingdom	£14.99
States & Capitals	£14.99
Touch Typing	£19.99
Music Composer (Cartridge)	£35.99
Home Entertainment (Cartridge except where stated)	
Galaxian	£29.99
Defender	£29.99
Asteroids	£29.99
Basketball	£24.99
Blackjack (Cassette)	£14.99
Caverns of Mars (Disk)	£29.99
Centipede	£29.99
Computer Chess	£24.99
Missile Command	£29.99
PAC Man	£29.99
Space Invaders	£29.99
Star Raiders	£29.99
Cribbage & Domino	£19.95
European Scenic Jig-saw	£19.99
Programming Languages & Ajds	
Assembler Editor	£39.99
Atari Basic Cartridge	£39.99
Macro Assembler (Disk)	£59.99
Pilot (Consumer)	£59.99
Pilot (Educator)	£89.99
Entertainer Kit (Star Raiders Missile Command & Pair Joysticks)	£69.99
Programmer Kit (Basic Cartridge & Manuals)	£39.99

Commodore VIC-20



Now a top quality home/business micro for the price of a games machine.
■ Memory expandable to 32K ■ High resolution (full PET type) graphics ■ 16 Screen colours and 8 border colours ■ Plugs in to your TV, or monitor ■ Add Disk Drive & Printer for impressive 170K Byte system ■ Can act as an intelligent terminal for a larger computer.

£129.90 INCLUDING VAT

SPECTRUM FACTS

Maximum user RAM	3,853
Text Screen	22 x 23
High Resolution	176 x 158
Cassette Lead	Needs own Recorder

VISCOUNT SUPER X2

64K DYNAMIC RAM PACK for VIC-20

EXCLUSIVE TO SPECTRUM!

Unbelievable-but-true, now you can up grade your VIC-20 from 3.5K to a massive 67½ RAM. Enables you to load up to 8 games or programs at a time & still select which one you wish to use. Can be used in conjunction with other expansions to increase total memory up to 152K-using the VIC memory expansion board. The SUPER X-2 will make your VIC-20 the biggest little micro in town!

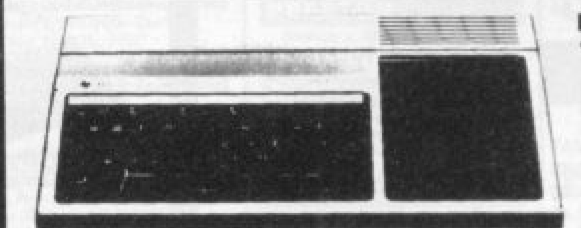
Spectrum LOW price £114.94 INC. VAT

COMMODORE 64

Very limited supplies of this new micro now available – please check with your local SPECTRUM dealer before making a journey.

Spectrum LOW Price £345.00

TEXAS TI99/4A



■ 16K RAM (expandable to 48K) ■ Built-in 14K Byte BASIC interpreter ■ 16 Bit Micro-processor ■ 16 Colour High Resolution graphics ■ Extensive range of solid state software command modules available from games to architectural aids.

Spectrum LOW Price £154.95 INC VAT (£134.74 ex. VAT)

SPECTRUM FACTS

Maximum user RAM	14,500 Bytes (approx.)
Text Screen High Resolution	256 x 192
Cassette Lead	Extra £10.95

	EX. VAT	INC. VAT
TEXAS PERIPHERALS		
Speech Synthesizer	£40.50	£46.58
Peripheral Exp. System	£122.00	£14.30
Disc Cont. Card	£124.30	£142.95
Disc. Drive	£234.74	£269.95
RAM Exp. Card	£179.57	£206.50
Matrix printer	£347.78	£399.95
Software Entertainment		
TI Invaders	£16.48	£18.95
Tombstone City	£19.96	£22.95
Attack	£19.96	£22.95
Parsel	£23.45	£26.96
Car Wars	£23.43	£26.95
Munchman	£23.43	£26.95
Adventure & Pirate	£31.26	£35.95
Education		
Number Magic	£12.13	£13.95
Addition/Subt. 1	£23.43	£26.95
Teach yourself beginners		
BASIC	£8.26	£9.50
Home Budget Management	£19.96	£22.95

. . . and many more

MORE SPECTRUM LOW PRICES!



A few examples from our

Software SELECTION

from independent software houses

THORN EMI

Software for Atari	Inc. VAT
Submarine Commander	£34.44
Jumbo Jet Pilot	£34.44
Soccer	£28.84
Kickback	£29.84
Home Financial Management	£19.49
Darts	£19.49
Snooker & Billiards	£19.49
Pool	£19.49
Cribbage & Dominoes	£14.89
Cupute 4 & Reversi	£14.89
Mutant Herd	£24.25
Software for Commodore.	
River Rescue	£25.24
Vic Music Composer	£25.24
Jungle	£4.49
Cosmic Battle	£4.49
Frogger (3K)	£9.49
Rabbit Functions	£4.49
Code Breaker	£4.49
Night Flight (3K)	£4.49
Rabbit Writer (16K Cassette)	£19.49
Rabbit Base (16K Cassette)	£14.49
Myriad (3K)	£9.49
Charset/20 (3K)	£4.49
Skramble	£9.49
Space Phreeks	£9.49
Night Crawler	£9.49.
Hopper	£9.49
Tank War	£7.49

GEM

Software for ZX81, Dragon and Spectrum	Inc. VAT
Monster Mine (for ZX 81)	£4.95
Monster Mine (for Spectrum)	£4.95
Monster Mine (for Dragon)	£7.95
Space Mission (for ZX 81)	£4.95
Space Mission (for Spectrum)	£4.95
Space Mission (for Dragon)	£7.95
Dragon Golf	£7.95
Dragon Character Generator	£9.95

SALAMANDER

Games for Dragon 32	Inc. VAT
Dragon Trek	£9.95
Wizard War	£7.95
Vulcan O/+	£7.95
Games Compendium DI	£7.95
Golf	£7.95

RABBIT

Software for Commodore VIC20	Inc. VAT
Space Storm	£6.49
Ski Run	£4.49
Dune Buggy	£4.49
Super Worm	£4.49

KUMA

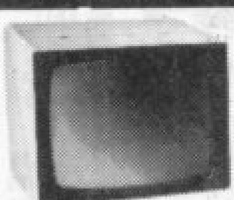
Software for Sharp	
Electron 22622	£9.20
Cribbage	£12.08
Adventure	£12.08
Chess	£16.68

AUDIOGENIC

Programs for VIC-20	Inc. VAT
Amok	£6.95
Alien Blitz	£7.95
Golf	£7.95
Spiders of Mars	£19.95
Sattelite & Meteorites	£19.95
Bonzo	£7.95
Trashman	£19.95
Boss	£14.95
Tank Attack	£19.95
Word Craft Word Processing package	£125.00

Plus many more at your local SPECTRUM dealer—call in now and see!

ACCESSORIES



SANYO Colour Monitor
CDD3125N
ONLY
£228.85 inc. VAT
(£199.00 ex. VAT)

SANYO	Inc. VAT
SANYO 12" green monitor	£80.50
Slim 3G Cassette Recorder	£29.95
CTP 3131 14" Colour TV Set	£229.95
C12 Cassettes	£0..50
Single sided, single density disks	£1.95
Double sided, double density disks	£3.38
Disk head cleaner	£16.10
Single part 11" x 9½" printer paper, box of 2,000 sheets	£13.05
VIC-20 Accessories from Viscount	
Motherboard without Buffer	£24.95
Motherboard with Buffer	£29.90
16K RAM Pack	£43.95
32k RAM Pack	£66.95
64K RAM Pack	£114.94
Currah Chatterbox Voice Synthesiser	£57.45

Now available from Spectrum Computer Centres— the top selling:-

SINCLAIR ZX-SPECTRUM



Yes, this top selling micro is now available from your local **SPECTRUM COMPUTER CENTER** in both **16K** and **48K RAM**. So now there's no need to send by mail order, just call into your local **SPECTRUM** dealer and pick one up. But just one word of warning, with this added availability advantage stocks are bound to sell fast – so make it soon!

SINCLAIR ZX SPECTRUM 16K - £125.00
SINCLAIR ZX SPECTRUM 48K - £175.00

Spectrum Computer Centres have no connection whatsoever with the ZX-Spectrum Computer manufactured by Sinclair Research Ltd.

SINCLAIR ZX-81

SINCLAIR ZX . . . £49.95
16K RAM pack . . £29.95
ZX Printer £59.95

Computer Bookshop Software for Sinclair Computers	INC. VAT
Bumper 7 1K ZX81	£5.95
1K Super Trio ZX81	£7.95
Labyrinth 16K ZX81	£5.95
Nightmare Park/Music 16K ZX81	£6.95
Computacalc 16K ZX81	£7.95
Personal Banking System 16K ZX81	£11.44
Space Invaders/Rescue 16K ZX81	£6.95
Breakout 16K ZX81	£5.95
Mugsy 16K ZX81	£5.95
Mergatroyds 16K ZX81	£5.95
Progmerge 16K ZX81	£5.95
Football Manager 16K ZX81	£7.95
Cassettes for ZX81 Type—10	
6 Games	£3.95
Junior Education	£3.95
Business & Household	£3.95
Skill & Judgement Games	£3.95
Junior Education	£3.95
Family Quiz	£3.95
Type—20	
Fantasy Games	£4.75
Space Raiders & Bombers	£4.75
Type—30	
Super Programs Nos. 1-8	£4.95
Type—40	
Backgammon	£5.95
Flight Simulation	£5.95
Type—50	
English Literature 1	£6.95
English Literature 2	£6.95
Geography	£6.95
History 1	£6.95
Maths. 1	£6.95

Give your ZX81 the power of a big micro!
CHEETAH 64K RAM PACK
ONLY £54.95

Quality PRINTERS at super LOW prices from Spectrum

EPSON



Model	INC. VAT
MX80-T3	£378.35
MX80 F/T Type III	£424.35
MX100 Type III	£539.35

Please see your SPECTRUM dealer for prices of INTERFACE/CABLE options.

SEIKOSHA



GP-100A
Now a top quality graphic printer at a price you can afford. Centronics interface connects easily with most micros.
Spectrum LOW price £229.94 Inc. VAT
Cables & Interfaces available for most micros.

SMITH CORONA

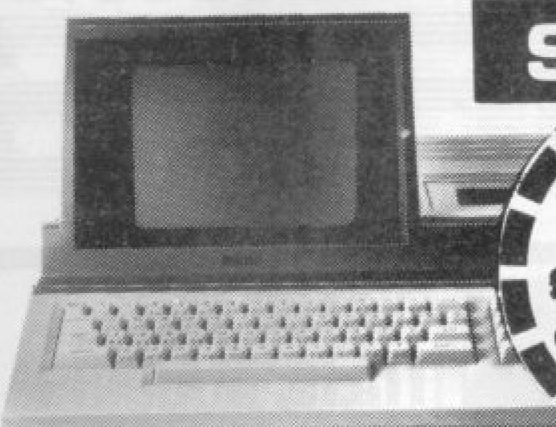


Model TP-1
Microprocessor controlled, high quality daisy wheel printer at a LOW cost from **SPECTRUM**. Serial, Parallel or IEEE Interface.
Spectrum LOW price £557.75 Inc. VAT

BOOKS

SELECTION FROM THE COMPUTER BOOKSHOP	
30 Hour Basic for the B.B.C. Micro	£5.95
Let your B.B.C. Micro Teach You To Programme	£6.45
B.B.C. Micro Revealed	£7.95
Over The Spectrum	£6.95
60 Games and Applications for the Zx Spectrum	£4.95
Programming The 6502	£9.95
Programming Your Zx Spectrum	£6.95
ZAP Pow Boom for the Vic 20	£7.95
The ZX Spectrum Explored	£5.95
Vic Inovative Computing	£6.95
Mastering Machine Code on Your Zx81	£7.50
The Zx Spectrum and how to get the most from it	£5.95
Easy Programming for the ZX Spectrum	£5.95
30 Programmes for tle B.B.C. Micro	£4.95
CPM Handbook	£11.50
Programming the Z80	£11.95
20 Best Programmes for the ZX Spectrum	£5.95
Getting Aquainted with your Vic 20	£6.95
Machine Code and Better Basic	£7.50
The Cambridge Colour Collection (Spectrum)	£6.95
Vic Revealed	£10.00
De RE Atari	£17.00
ATARI Operating system listing	£10.43

Spectrum Computer Centres have no connection whatsoever with the ZX-Spectrum Computer manufactured by Sinclair Research Ltd.



SHARP MZ-80A

FREE! £75 WORTH of software with every MZ80A purchased

Desk top genius! - the all-in-one SHARP MZ-80A. Ready to run the moment you get it home. Built-in keyboard, CRT, 9" display and cassette data storage with **48K RAM**. The BASIC with extra useful additions, offers quite a powerful micro for the home or business ■ 4K Byte ROM · 48K Byte RAM · 2K Byte Video RAM ■ ASCII profiled keyboard · numeric pad ■ 2 page Video RAM allows screen to be scrolled up or down ■ CP/M available.

SPECTRUM FACTS

SHARP MZ80A Maximum user RAM 32,000 Bytes (apx.) Text Screen 25 x 40. High Resolution Box 50. Cassette Lead, Cassette Player included.

Spectrum LOW Price £546.25 Inc. VAT

Floppy Disks and Accessories for MZ80A

Twin Floppy Disk Unit (inc. I/O Card, Disk, Cable)	£856.75
Single Floppy Disk Unit (inc. I/O Card, Disk, Cable)	£460.00
Twin Disk Unit (only)	£678.50
Single Floppy Disk Unit	£480.00
Cable for F/D Drive	£29.79

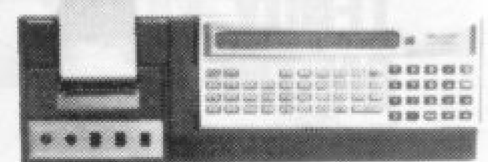
Printers and Accessories for MZ80A, MZ80B & MZ80K

80 Col Tractor Feed Printer inc. Cable, I/O Card & Rom	£477.25

Few only left!

SHARP PC1211

COMPLETE WITH CASSETTE/PRINTER INTERFACE



Ideal for HOME, OFFICE or SCHOOL High performance functions with easy to understand BASIC language.

Unbelievable Value at only £79.95

But HURRY! Stocks strictly limited - first come first served

There's a Spectrum Centre near you . . .

ABERYSTWYTH
AberData at Galloways, 23 Pier St. 0970 615522

ABINGDON
Ivor Fields Computers, 21 Stert St. 0235 21207 (Just Opening)

ACCRINGTON
PV Computers, 38A Water St. 0254 36521/32611 (Just Opening)

ALDERSHOT
David Saunders Computer Centre, 51 Station Rd. 0252 20130 (Just Opening)

ALFRETON
Gordon Harwood, 69/71 High St. 0773 832078

ASHFORD
Ashford Computer Centre, 2 Station Parade, Clarendon Rd. 07842 44955

BANBURY
Computer Plus, 2 Church Lane, (0295) 55890

BARROW-IN-FURNESS
Barrow Computer Centre, 96 Church St. 0229 38353 (Just Opening)

BASILDON
Godfrey's, 28-32 East Walk, Town Centre. 0268 289379

BASINGSTOKE
Fisher's, 2/3 Market Place. 0256 22079

BATH
Software Plus, 12 York St. 0225 61676

BEACONSFIELD
Jameson, 12-14 Warwick Rd. 049-46 4455 (Just Opening)

BEDFORD
Stanad Ltd., 115 Midland Rd. 0234 49341 (Just Opening)

BELFAST
Arthur Hobson Ltd., 37 Great Victoria St. 0232 246336 (Just Opening)

BIRMINGHAM
Sherwoods, Great Western Arcade. 021 236 7211

BOSTON
Fotosound Computers, 19 Dolphin Lane. 0205 64781

BRADFORD
Photosave, 18 Cheapside. 0274 308598

BRIGHTON
Capricorn, 1 Queens Rd. 0273 29634

BURY ST. EDMUNDS
Bury Computer Centre, 11 Guildhall St. (Just Opening)

CAMBERLEY
Camera Arts (Micro Computer Division), 36 High St. (0276) 65848

CAMBRIDGE
KP Ltd., 12a Kings Parade. 0223 68087

CANTERBURY
Kent Micro Systems, Conquest House, 17 Palace St. 0227 50200

CARDIFF
Randall Cox, 18-22 High St. Arcade. 0222 31960

CHELMSFORD
Maxton Hayman Ltd., 5 Broomfield Rd. (0245) 354595

CHESHAM
Reed Photography & Computers, 113 High St. 0494 783373 (Just Opening)

COVENTRY
Coventry Micro Centre, 33 Far Gosford St. (0203) 58942

DARLINGTON
McKenna & Brown, 102 Bondgate. (0325) 59744

DERBY
C T Electronics, at Camera Thorpe, The Spot. 0332 44760

DONCASTER
Briarstar Computer Centre, 13 Netherhall Rd. 0302 67135 (Just Opening)

DUMFRIES
Vennals, 71 English St. 0387 4547

DUNSTABLE
Dormans, 7-11 Broad Walk. 0582 65515

EDGWARE
Breaker 1-4, 130 High Street, 01-952 7488/8860 (Just Opening)

EDINBURGH
The Silicon Centre, 6-7 Antigua St. 031 557 4546

GLASGOW
Victor Morris Ltd., 340 Argyle St. 041 221 8958

GLOUCESTER
The Model Shop, 79-81 Northgate St. (0452) 410693

GRIMSBY
R. C. Johnson Ltd., 22 Friargate, Riverhead Centre. 0472 42031

GUERNSEY
Grut's, 3-5 The Pollet, St Peters Port. 0481 24682 (Just Opening)

GUILDFORD
The Model Shop, 23 Swan Lane. (07072) 0483 39115

HARROW
Camera Arts (Micro Computer Division), 24 St. Ann's Rd. 01-427 5469

HATFIELD
Microworld, 2 Crawford Rd. (07072) 64137

HITCHIN
Camera Arts (Micro Computer Division), 68A Hermitage Rd. 0462 59285

HULL
The Computer Centre (Humberside) Ltd., 26 Anlaby St. (0482) 26297

ILFORD
Prot Enterprises, 1 Centreway, High Rd. 01-553 0144 (Just Opening)

IPSWICH
Brainwave, 24 Crown St. 0473 50965

JERSEY
Audio & Computer Centre, 7 Peter St., St. Helier 0534 74000

KILMARNOCK
Vennals, 49 Foregate 0568 32175

LEEDS
Bass & Bligh, 4 Lower Briggate. 0532 454451

LEICESTER
Youngs, 40-42 Belvoir St. 0533 544774

LITTLEHAMPTON
Alan Chase Ltd., 39 High St. 09064 5674/4545 (Just Opening)

LIVERPOOL (Aintree)
Hargreaves, 31/37 Warbreck Moor. 051-525 1782 (Just Opening)

LONDON E8
McGowans, 244 Graham Rd. Hackney. 01-533 0935 (Just Opening)

LONDON EC2
Devron Computer Centre, 155 Moorgate. 01-638 3339/1830

LONDON SE1
Vic Odden's, 6 London Bdg. Walk 01-407 6833 403 1988 (Mail Order)

LONDON SE9
Square Deal, 375 Footscray Rd., New Eltham. 01-859 1516

LONDON SE15
Castlehurst Ltd., 152 Rye Lane, Peckham. 01-639 2205

LONDON SW6
Chelsea Micros Ltd., 14 Jerden Place. 01-385 8494 (Just Opening)

LONDON N1
ASP Micro Systems, 185 Upper St., Islington. 01-359 9095

LONDON N.20
Castlehurst Ltd., 1291 High Rd. 01-446 2280

LONDON NW9
Moviescope, 459 Kingsbury Rd., London NW9. 01-204 6352 (Just Opening)

LONDON W1
Devron, 4 Edgware Road. 01-724 2373

LONDON W1
Computers of Wigmore Street, 87 Wigmore St. 01-486 0373 (Just Opening)

LONDON W3
Colormatic Computers, 44 High St., Acton. 01-992 7611

LONDON W11
Electroleisure, 120 Notting Hill Gate. 01-221 7029

LOUGHTON
Micro & Movie Channel 309 High Rd. 01-508 1216

LOWESTOFT
John Wells, 44 London Rd. North. 0502 3742 (Just Opening)

LUTON
Terry-More, 49 George St., 0582 23391/2

MACCLESFIELD
Camera & Computer Centre, 118 Mill St. 0625 27468

MANCHESTER
Lomax Ltd., 8 Exchange St., St. Ann's Sq. 061 832 6167

MANCHESTER GTR.
Mr. Micro Ltd., 69 Partington Lane, Swinton. 061 7282282 open Thurs.-Fri.-Sat. till 8 p.m.

MANCHESTER GTR.
PASE, 213-215 Market St., Hyde. 061-366 5935 Telex: 665845

MANCHESTER GTR.
Wilding Ltd., 23 Deansgate, Bolton. 0204 33512

MIDDLESBROUGH
McKenna & Brown, 190 Linthorpe Rd. 0642 248345

NEWCASTLE-ON-TYNE
Newcastle Camera & Computer Mart, 16 Northumberland Ct. 0632 327461

NEW MALDEN
Surrey Micro Systems, 31 High St. 01-942 0478

NEWPORT (Gwent)
Randall Cox, 118 Commercial St. 0633 67378

NORTHAMPTON
Basic Computers & Systems Ltd., 72 Kingsthorpe Hollow. 0604 710740

NORTHWICH
Camera & Computer Centre, 3 Town Sq. (0606) 45629

NORWICH
Sound Marketing, 52 St Benedicts St. 0603 667725 (Just Opening)

NOTTINGHAM
Cameo Computers, 8/9/10 Trinity Walk. 0602 42912

NOTTINGHAM
Basic 39-41 Trent Boulevard, West Bridgeford 0602 819713

OLDHAM
Home & Business Computers Ltd., 54 Yorkshire St., 061-633 1608

PAIGNTON
Devon Computers, 81 Upper Manor Rd. (0803) 526303

PEMBROKE
Randall Cox, 19 Main St., 064 668 2876

PETERBOROUGH
Peterborough Communications 91 Midland Rd. 0733 41007

PETERHEAD
DIMES Electronic Services, 1-3 Ellis St. 0779 79900 (Just Opening)

PRESTON
Wilding's, 49 Fishergate. 0772 556250

READING
David Saunders Computer Centre, 8 Yield Hall Plce. 0734 580719

ROTHERHAM
Kenneth Whitehead, 2 Market St. 0709 62594 (Just Opening)

RUGBY
The Rugby Micro Centre, 9-11 Regent St. 0788 70522

SEVENOAKS
Ernest Fielder Computers, Dorset St. 0732 456800 (Just Opening)

SHEFFIELD
Superior Systems Ltd., 178 West St. 0742 755005

SOUTHAMPTON
R. J. Parker & Son Ltd., 11 Portsmouth Rd., Woolston, Southampton. 0703 434137/8 (Just Opening)

SOUTHPORT
Central Computers, 575 Lord St. 0704 31881 (Just Opening)

STAFFORD
Computerama, 59 Forgate St. (0785) 41899

STEVENAGE
D. J. Computers 11 Town Sq. 0438 65501

STOCKPORT
Wilding Ltd., 1 Little Underbank, Stockport. 061-480 3435

STOKE-ON-TRENT
Computerama, 11 Market Sq. Arcade, Hanley (Opening Soon)

ST. ALBANS (Herts)
Clarks Computer Centre, 14-16 Holywell Hill. 0727 52991

ST. AUSTELL
A B & C Computers, 11 Brookstone Rd. (0726) 64463

TAUNTON
Grays, 1 St James St. 0823 72986 (Just Opening)

TEDDINGTON
"Andrews", 49 Broad St. 01-977 4716

WALLINGTON
Surrey Micro Systems Ltd., 53 Woodcote Rd. 01-647 5636

WARRINGTON
Wildings, 111 Bridge St. 0925 38290

WATFORD
SRS Microsystems Ltd., 94 The Parade, High St. 0923 26602

WEST BROMWICH
Bell & Jones, 39 Queens Sq. 021 553 0820

WHITEHAVEN
P. D. Hendren, 15 King St. 0946 2063 (Just Opening)

WIDNES
Computer City, 78 Victoria Rd. 051 420 3333

WIGAN
Wilding Ltd., 11 Mesnes St. 0942 44382

WOKING
Harpers, 71-73 Commercial Way. 04862 61061

WORCESTER
David Waring Ltd., 1 Marmion House, High St. 0905 27551

GT. YARMOUTH
Tony Hood Electronic, 26A Market Gate Shopping Centre 0493 3143

YORK
York Computer Centre, 7 Stonegate Arcade. 0904 641862
Opening soon in: Liverpool, Bristol, Hereford, Weston-Super-Mare, Portsmouth, Bury, Crewe, Borehamwood, Colchester, Bromley

Not all stores carry every advertised item, please phone before making a journey — Prices correct at time of going to press E. & O.E.

GAMES NEWS

TEDDY TAKES ON THE TROOPS

AH, DIDDUMS!

New from Imagine this month is cute novelty game called Ah Diddums. There is more than a touch of Mary Poppins in this game where the goodies of the toy box team up against the baddies.

You control a small teddy bear armed with a pea-shooter and a supply of wellington boots which can be flung at the tin soldiers, a nasty train set, and various ugly shapes of plasticine — all of which are out to get poor Edward Bear.

You have to fight off these nursery nasties before they knock the stuffing out of Teddy!

Ah Diddums runs on the Sinclair Spectrum in 16 or 48K.

The game is available by mail order from Imagine Software of Liverpool and at some larger branches of W. H. Smiths at £5.50.



ADVENTURE AND ACTION FOR ORIC

ORIC

Bug Byte, Psion, Salamander and Quicksilva are some of the established software houses that have been signed up to write games for the new Oric computer which has just gone on sale.

The £100 machine which will compete directly with the Spectrum and will also have a range of games under Oric's own label. These will include Chess, Go, Adventure and Invaders.

Bug Byte will supply a text only adventure called The Castle, Salamander will produce Backgammon, 3D Maze, a Star Trek type game and an adventure, and Quicksilva are working on an original arcade style game.

Other games listings will be published in the Oric owners magazine which is to be published every two months.

Computer and Video Games will also be publishing a professionally written game for the Oric in our June issue.

Illustrations: John Davis

GET DUG IN TO BEAT THE MONSTERS

APPLE PANIC

Creative Software titles coming into the UK from America include Apple Panic, a game in which you must dig holes to trap the Apple monsters that are pursuing your little man.

Serpentine introduces snakes and frogs into the maze chase style game. In order to survive you have to avoid or devour the hostile red serpents. If you do, you can lay eggs and hatch baby snakes.

The games are sold in the UK by Audiogenic of Berkshire and are in the shops now at £24.95.

WATCH THE BIRDIE ON A DRAGON!

DRAGON GOLF

If it's too wet for your Saturday morning round of golf and you can't face the weekend without it then relax as you may still be able to get a hole in one with this latest golf simulation for the Dragon.

Dragon Golf is a nine hole golf course incorporating many features of the real game.

Each hole is displayed as played including all bunkers, water hazards and greens. In addition, wind strengths and directions play an important part in the match as well as ensuring that each hole plays differently, even if the same clubs are selected by each player.

You can select from a full range of clubs including woods, irons, and putters and can chose the angle of shot and the strength of stroke as you aim for a hole in one.

Dragon Golf is available from Reading-based Audiogenic on tape at £5.00.

ESCAPE FROM THE PLANET OF DANGER

ORION

Escape from Orion is a new BBC space game incorporating some of the features of the popular arcade game Donkey Kong.

Your flying saucer is moved backwards and forwards with the joystick and hops by depressing the fire button.

Four screens of progressive difficulty must be negotiated with a bonus score for each screen successfully completed.

As you proceed your ship must hop up to collect resources you need for the voyage: fuel rods, tools, water, oxygen.

Escape from Orion runs on the BBC model B and is available at £6.75 inclusive from Hopesoft of Berkshire.

WATCH OUT THERE'S A MINE ABOUT!

MINED OUT

You'll have to watch where you are treading in Quicksilva's latest game.

Mined Out challenges you to get safely across a field which is riddled with enemy mines. Put one foot in the wrong place and you'll be blown to bits.

To aid you in this perilous jaunt you are given a mine detector and some safe areas around the edges of the mine field where you can walk unharmed.

To add interest the fields are inhabited by a couple of hostile creatures: bugs and mine spreaders. Watch your step!

Mined Out is for the 48K Spectrum only and is in the shops now at £4.95.

ZX81 owners have also been included in this month's new releases from Quicksilva with three 16K games based on well known arcade money spinners.

Kroka Crawla is a version of Frogger, Munchies is a maze gobbling game similar to Pacman, and there is also a Galaxians with an extra bonus game on the same tape called Gloops. Kroka Crawla and Munchies will sell for £3.95 and Galaxians is a little dearer at £4.95.



GAMES NEWS

SEARCH FOR PRICELESS GOLD FLEECE

ARGONAUTS

Dragon owners may encounter a few dragons of the fire-breathing variety when they team up with Joseph and the Argonauts in the search for the golden fleece.

This priceless treasure is hidden on one of the numerous islands which are scattered throughout the seemingly endless seas which your battered ship must navigate.

As well as dangerous encounters with sea serpents, storms, yellow fever and the plague, you are constantly dogged by a thick mist which can cause you to go wildly off course.

You have a limited amount of fuel and food to last the voyage. This is randomly decided by the computer each time you play.

Joseph and the Argonauts is a part text and part graphics adventure. The game is the latest addition to the range of games from Item Limited for the Dragon home computer. It is available from the Berkshire-based firm at £4.95 inclusive.



SUPERSTORE NEEDS A SUPER 'TEC

SNATCHER

If you have ever wondered exactly what your boss thinks of you then you will be left in no doubt when you play Catch a Snatcher on the unexpanded Vic.

Your popularity rating with the boss is displayed as a constantly changing percentage, depending on your performance.

You are a store detective patrolling a large department store. Shoplifters, lost children, lost property, lost dogs, and even a terrorist bomb must all be dealt with by you – the dilligent security officer.

Escort a stray dog out of the food hall and your popularity rating goes up but let a thief get away with a portable telly and it falls straight back down again.

Your rating begins at fifty per cent and, if you go above the ninety nine percent mark, you progress on to a new but more difficult floor. The game is available by mail order from Imagine Software of Liverpool and larger branches of W. H. Smith at £5.50.

SCRAMBLING WITH THE INVADERS . . .

ARCADIA

Two hit arcade games on one tape is the latest offering from the well established Sinclair software house – J. K. Grey.

Scramble and Invaders are the titles from the arcades with another two giveaway games thrown in for good measure.

Arcadia is the name of the games pack and it runs on the Sinclair Spectrum in 16 and 48K. It is available at £4.95 from the Bath-based firm.

RETURN TO THE WORLD OF ZORK

ZORK III

Adventure fans will need no introduction to the Zork tales which are becoming as popular in the U.S. as the classic Scott Adams adventures.

If you managed to get to the Stone Barrow in Zork, and became Master of the Domain, having defeated the senile Wizard of Frobozz in Zork II, then you will be anxious to enjoy the action of the final and concluding tale.

Zork III starts with you placed at the bottom of a long staircase.

At the end of the staircase is the Treasure Room filled with all the treasures of Zork.

The conclusion has an unusual twist, although you will need to use an equally unusual approach to get that far.

Zork I, II, and III are available, on disc only, for the Apple and Atari computers.

The Atari versions are available from Calisto Computers of Birmingham at £30 each and the Apple versions from Pete and Pam Computers of Rossendale, Lancashire at £25.95.

MONKEY BUSINESS WITH KONG!

KRAZY KONG

What do you get if you take a gorilla, a blond starlet, and a mad carpenter called Mario. Correct — you got it in one, it's Donkey Kong! More accurately, it's Krazy Kong, in this new version of the hit arcade game for the 16K ZX81.

The game has three screen presentations with tumbling barrels, money bags and lifts. It is available from Personal Software Services of Coventry at £3.95, including postage and packing.

Spectrum owners have also been included in the new releases from PSS with a scrolling maze game. The idea of Maze Death Race is to escape from an enormous maze before the evil cars run you down. Maze Death Race is available at £4.95.

I'VE GOT YOU UNDER MY SKIN!

MANGROVE

Beneath the surface of your skin a major battle is being fought!

On one side are the massed ranks of cells that cluster together in groups of four, in defensive formation to withstand the onslaught from the attacking microbes.

Until recently you would have needed an extremely powerful microscope to witness this fantastic battle. But now you can not only see the action on your screen but you can actually take part yourself fighting the good fight against the disease bringing microbes, in Mangrove, an original game from Supersoft.

Move around the screen using the joystick depositing cells as you travel. Only cells in groups of four can survive.

To beat off the microbes you are armed with three smart bombs which will kill off all the microbes on the screen.

Points are awarded for each cell deposited and these are counted up on the sixth beat of the heart which pumps continuously throughout the game.

Every five thousand points there is a microbe storm so you had better keep a smart bomb or two in reserve.

Mangrove runs on a Commodore Pet and is available at £8 from Supersoft of Harrow with Vic-20 and Commodore 64 versions in the pipeline from Audiogenic Ltd of Reading.

GAMESNEWS

SPLICE THE MAINBRACE, LANDLUBBERS

SAILING

If you're keen on simulations but think flying is for the birds a Dublin software company suggests you try your hand at sailing.

With Sailing Simulator you are in charge of a 50 foot sailing yacht with a screen split into two halves. The top half devoted to an instrument display and the bottom half showing a map.

The display gives the level of heel of the boat, or whether you are likely to ship water. There is a profile of the ship showing the amount of sail, a control for the anchor, a picture of the boat from above which shows where the wind is coming from and a compass heading.

Your five controls feature port and starboard, increasing and reducing sail and finally the anchor. While a text display gives the weather forecast.

Your job is to navigate into three imaginary ports which vary in difficulty. When approaching land the map changes to show the coastal charts and you must take care not to run aground. The weather is also a product of the programmer's imagination but mainly moderate – although you may find yourself up against a hurricane or a high swell.

The game runs on a 48K Spectrum and costs about £5 from Soft Options of Castle Nock, Co. Dublin.

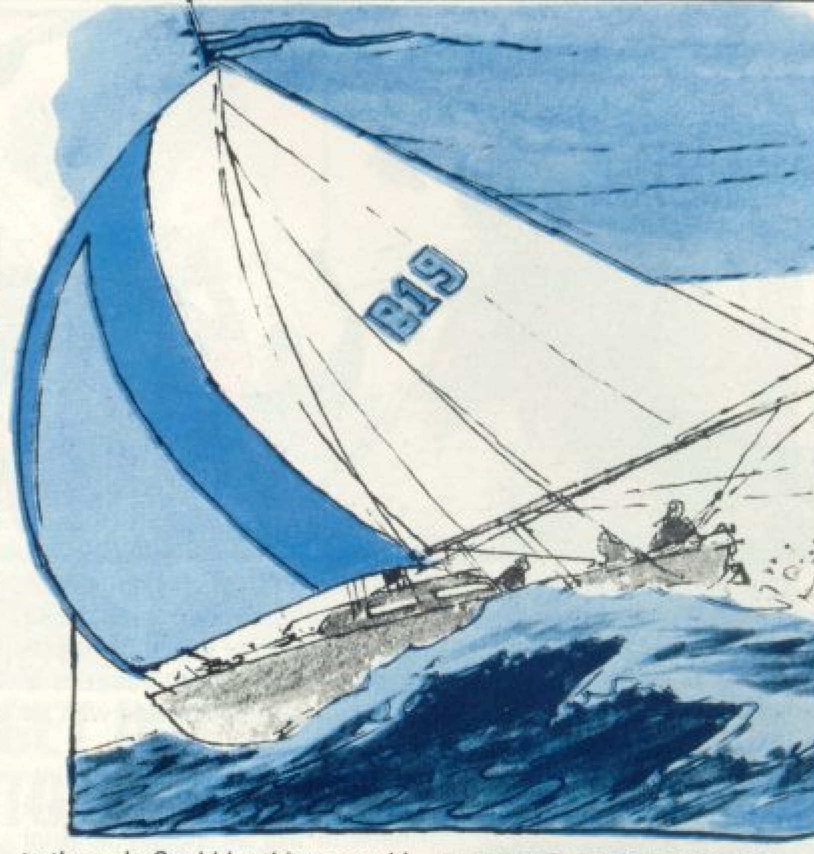


Illustration: Jon Davis

DON'T DRINK AND JUMP THE ROAD!

DARE-DEVIL

Sharp MZ-80K owners are in for a bumper choice of games from a new range just on sale.

Dare-Devil is based on the popular arcade game Frogger — though instead of getting a frog safely to the spawning grounds you are charged with the far more important task of getting the dare-devils across the road to the pub. Could be thirsty work!

Encounter challenges you to stop a Martian spaceship landing on planet earth.

The third original game on Games Pack Four is Railroad where you control several trains on a network railway. Switch the points quickly to stop them crashing. Pontoon and Pinball are also included.

Three simulations are the main attractions on Games Pack Five which enable you to drive a car, fly a plane, and command a fleet in the mid-Atlantic sea battles of World War Two. Noughts and Crosses and a maze chase game are also featured.

Games Pack Six offers a 23K adventure called Lost in the Jungle which challenges you to find your way back to civilisation and overcome attacks from wild beasts you will encounter on your way. This is a part text and part graphics adventure.

If you fancy becoming a Wizard and attempting to cast a spell on an unruly dragon then Games Pack Seven may be more your cup of tea. This cassette also features Air Attack — an air sea battle in which you command a warship, Take Away which is a version of Solitaire, and two original games called Plonker and Trap.

The Games Pack range are all available from Remus Software of Manchester, at £6 each.

WHO WANTS TO BE A MILLIONAIRE?

MONOPOLE

Monopoly — that famous Waddingtons board game has been converted for play on your home computer.

This should enable you to avoid having to use a thimble or twenty pence piece when your favourite boot or top hat has been lost and the 500 pound notes and title deeds to Mayfair and Park Lane have been chewed up by the cat.

No harm can come to the pieces in computer Monoply as everything you need to play is safely stored away on cassette.

Monopole — with an 'e' not a 'y' presumably to avoid copyright problems — runs on the Commodore 64 and costs £9.99 from Rabbit Software of Harrow.

Commodore 64 owners can also look forward to a range of adventure games to play.

The first three games on Adventure Pack 1 are Moonbase Alpha, Big Bad Wolf, and Computer Adventure. Adventure Pack 2 will follow shortly with a graphic Adventure called Grave Robbers.

These will also be available at £9.99.

THIS GREAT LITTLE MOVER!

PHANTOM CHESS

The Phantom Computer Chess machine is a great little mover. Not only does it play to a good standard but it needs no manual help in advancing pawns, leaping knights are castling. It's all done by magnets.

It will quite happily play itself while you watch from a distance. And then set out the pieces again for another game.

It has 12 game levels and comes with a booklet showing the rudiments of chess for a complete beginner. It further helps beginners by analysing their next move for them.

The game is marketed by Milton Bradley and sells for around £300. It is set in a large black square of moulded plastic.

The knight is moved by clearing a path past the intervening pawns and taken pieces are moved off-board onto two strips with the appropriate symbols.

If a human player hopes to take on the machine it responds as a sensory board and also plays a good range of openings.

BLAST THOSE TOUGH LITTLE INVADERS

SCRAMBLE

Two new shoot 'em up games are on offer from Mikro-Gen.

Scramble is a version of the now famous scrolling arcade game where you have to fly over an uneven landscape, bombing fuel dumps and shooting down aliens, whilst dodging fireballs and ground to air missiles.

Cosmic Raiders is a version of Defender, the toughest of all arcade games. You fly a ship over a planet's uneven terrain, protecting humanoids from the Landers and the Grabbers.

Scramble and Cosmic Raiders run on the Spectrum in 16 or 48K and are available from the Bracknell firm at £5.50 plus 40p postage and packing.

100 FREE PROGRAMS

FROM SILICA SHOP — WITH EVERY PURCHASE OF AN

ATARI 400 800

ATARI



REDUCED PRICES

We at Silica Shop are pleased to announce some fantastic reductions in the prices of the Atari 400/800 personal computers. We believe that the Atari at its new price will become the U.K.'s most popular personal computer and have therefore set up the Silica Atari Users Club. This club already has a library of over 500 programs and with your purchase of a 400 or 800 computer we will give you the first 100 free of charge. There are also over 350 professionally written games and utility programs, some are listed below. Complete the reply coupon and we'll send you full details. Alternatively give us a ring on 01-301 1111 or 01-309 1111.

ATARI 400 with 16K	**£159**
ATARI 400 with 48K	**£228**
ATARI 800 with 48K	**£349**

400/800 SOFTWARE & PERIPHERALS

Don't buy a T.V. game! Buy an Atari 400 personal computer and a game cartridge and that's all you'll need. Later on you can buy the Basic Programming cartridge (£35) and try your hand at programming using the easy to learn BASIC language. Or if you are interested in business applications, you can buy the Atari 800 + Disk Drive + Printer together with a selection of business packages.

Silica Shop have put together a full catalogue and price list giving details of all the peripherals as well as the extensive range of software that is now available for the Atari 400/800. The Atari is now one of the best supported personal computers. Send NOW for Silica Shop's catalogue and price list as well as details on our users club.

THE FOLLOWING IS JUST A SMALL SELECTION FROM THE RANGE OF ITEMS AVAILABLE:

ACCESSORIES
Cables
Cassettes
Diskettes
Joysticks
Le Stick - Joystick
Misc Supplies
Paddles

ADVENTURE INT
Scott Adams Adv
No 1 Adventureland
No 2 Pirate Adv
No 3 Mission Imp
No 4 Voodoo Cast
No 5 The Count
No 6 Strange Ody
No 7 Mystery Fun
No 8 Pyramid of D
No 9 Ghost Town
No 10 Sav Island 1
No 11 Sav Island 2
No 12 Golden Voy
Angle Worms
Deflections
Galactic Empire
Galactic Trader
Lunar Lander
Mountain Shoot
Rearguard
Star Flite
Sunday Golf

AUTOMATED SIMULATIONS
Crush Crumble Cmp
Datestones of Ryn
Dragons Eye
Invasion Orion
Rescue at Rigel
Ricochet
Star Warrior
Temple of Apshai
Upper Reaches Aps

BOOKS
Basic Ref Manual
Compute Atari DOS
Compute Bk Atari
Compute Magazine
De Re Atari
DOS Utilities List
DOS2 Manual
Misc Atari Books
Op System Listing
Wiley Manual

BUSINESS
Calculator
Database Managemt
Decision Maker
Graph-It
Invoicing
Librarian
Mort & Loan Anal
Nominal Ledger
Payroll
Personal Finl Mgmt
Purchase Ledger
Sales Ledger
Statistics 1
Stock Control
Telelink 1
Visicalc
Weekly Planner
Word Processor

CRYSTALWARE
Beneath The Pyram
Fantasyland 2041
Galactic Quest
House Of Usher
Sands Of Mars
Waterloo
World War III

DYNACOMP
Alpha Fighter
Chompelo
Crystals
Forest Fire
Intruder Alert
Monarch
Moonprobe
Moving Maze
Nominoes Jigsaw
Rings of The Emp
Space Tilt
Space Trap
Stud Poker
Triple Blockade

EDUCATION from APX
Algicalc
Atlas of Canada
Cubbyholes
Elementary Biology
Frogmaster
Hickory Dickory
Inst Comptg Dem
Lemonade
Letterman
Mapware
Maths-Tac-Toe
Metric & Prob Solvg
Mugwump
Music Terms/Notatn
Musical Computer
My First Alphabet
Number Blast
Polycalc
Presidents Of U.S.
Quiz Master
Starware
Stereo 3D Graphics
Three R Math Sys
Video Math Flash
Wordmaker

EDUCATION from ATARI
Conv French
Conv German
Conv Italian
Conv Spanish
Energy Czar
European C & Caps
Hangman
Invit To Prog 1/2/3
Kingdom
Music Composer
Scram
States & Capitals
Touch Typing

EMI SOFTWARE
British Heritage
Cribbage/Dominoes
Darts
European Scene Jig
Hickory Dickory
Humpty Dumpty
Jumbo Jet Lander
Snooker & Billiards
Submarine Commdr
Super Cubes & Tilt
Tournament Pool

ENTERTAINMENT from APX
Alien Egg
Anthill
Attank
Avalanche
Babel
Blackjack Casino
Block Buster
Block 'Em
Bumper Pool
Castle
Centurion
Checker King
Chinese Puzzle
Codecracker
Comedy Diskette
Dice Poker
Dog Daze
Domination
Downhill
Eastern Front
Galahad & Holy Grl
Graphics/Sound
Jax-O
Jukebox
Lookahead
Memory Match
Midas Touch
Minotaur
Outlaw/Howitzer
Preschool Games
Pro Bowling
Pushover
Rabbotz
Reversi II
Salmon Run
747 Landing Simul
Seven Card Stud
Sleazy Adventure
Solitaire
Space Chase
Space Trek
Sultans Palace
Tact Trek
Terry
Wizards Gold
Wizards Revenge

ENTERTAINMENT from ATARI
Asteroids
Basketball
Blackjack
Centipede
Chess
Entertainment Kit
Missile Command
Pac Man
Space Invaders
Star Raiders
Super Breakout
Video Easel

ON LINE SYSTEMS
Crossfire
Frogger
Jawbreaker
Mission Asteroid
Mouskattack
Threshold
Ulysses/Golden Fl
Wizard & Princess

PERIPHERALS
Centronics Printers
Disk Drive
Epsom Printers
Program Recorder
RS232 Interface
Thermal Printer
16K Memory RAM
32K Memory RAM

PERSONAL INT from APX
Adv Music System
Banner Generator
Blackjack Tutor
Going To The Dogs
Keyboard Organ
Morse Code Tutor
Personal Fitness Prg
Player Piano
Sketchpad

PROGRAMMING AIDS from Atari
Assembler Editor
Dsembler (APX)
Microsoft Basic
Pascal (APX)
Pilot (Consumer)
Pilot (Educator)
Programming Kit

SANTA CRUZ
Basics of Animation
Bobs Business
Display Lists
Graphics Machine
Kids 1 & 2
Horizontal Scrolling
Master Memory Map
Mini Word Processor
Page Flipping
Player Missile Gr
Player Piano
Sounds
Vertical Scrolling

SILICA CLUB
Over 500 programs write for details

FOR FREE BROCHURES – TEL: 01-301 1111

For free brochures and reviews on our range of electronic products, please telephone 01-301 1111. To order by telephone, just quote your name, address, credit card number, and order requirements and leave the rest to us. Post and packing is FREE OF CHARGE in the UK. Express 24 hour delivery available at an additional charge.

- SHOP DEMONSTRATION FACILITIES — we provide full facilities at our shop in Sidcup Monday to Saturday 9am to 5.30pm (closing Thursday 1pm, Friday 8pm).
- MAIL ORDER — we are a specialist mail order company and are able to supply goods direct to your door.
- MONEY BACK UNDERTAKING — if you are totally unsatisfied with your purchase, you may return it to us within 15 days. On receipt of the goods in satisfactory condition we will give you a full refund.
- PART EXCHANGE/SECOND HAND MACHINES — we offer a part exchange scheme to trade in many makes of T.V. game for personal computers.
- COMPETITIVE PRICES — our prices, offers and service are very competitive. We are never knowingly undersold, and will normally match any lower price quoted by our competitors.
- HELPFUL ADVICE — available on the suitability of various computers.
- AFTER SALES SERVICE — available on all computers out of guarantee.
- VAT — all prices quotes above include VAT at 15%.
- CREDIT FACILITIES — we offer credit over 12, 24 or 36 months, please ask for details.

SILICA SHOP LIMITED
Dept. C&VG 0483, 1-4 The Mews, Hatherly Road, Sidcup, Kent DA14 4DX.
Telephone 01-301 1111 or 01-309 1111.



FREE LITERATURE

I am interested in purchasing an Atari 400/800 computer and would like to receive copies of your brochures and test reports as well as your price list covering all of the available Hardware and Software:

Name ....

Address ....

....

....

Postcode ....

(CVG 0483) Computer & Video Games April 1983

IMAGIC DEMON FACES NEW ONSLAUGHT

LEGAL ATTACK

Established top seller Demon Attack is coming under fire in the US courts for being too similar to a cartridge Atari have still to bring out.

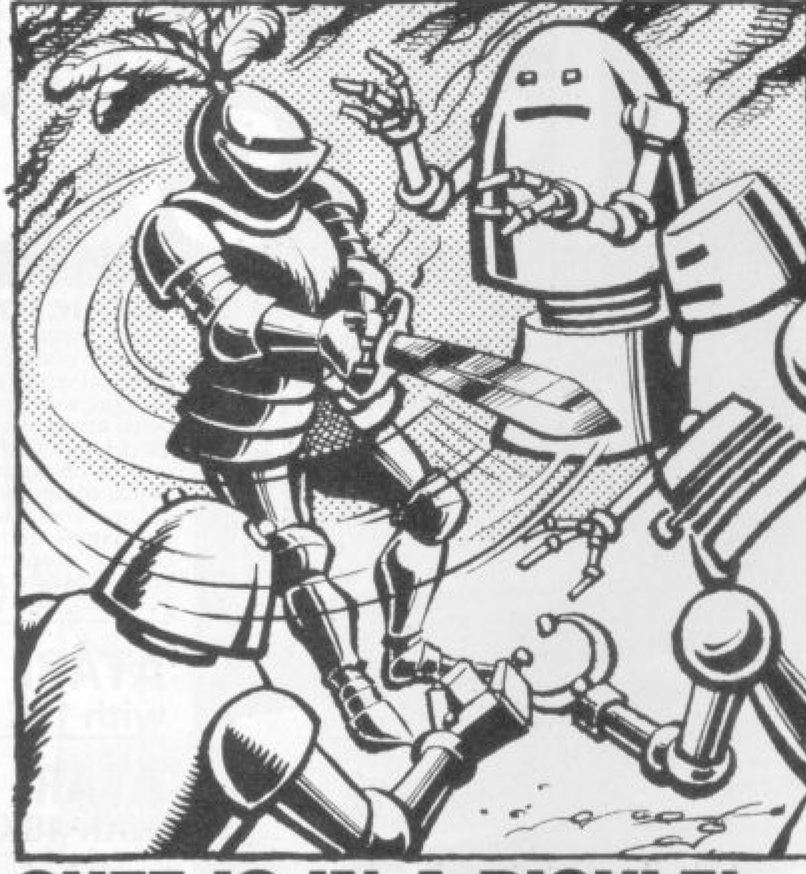
Atari-compatible cartridge producers, Imagic launched their range with the space game, Demon Attack. It is a top seller, both here and in the U.S. and recently became 1982 home video game of the year.

Atari claims that the cartridge is a copy of Pheonix which they are planning to release in home video form under licence from Centuri.

The notion of post-dated copyright is explained by Atari chairman Ray Kassar in the U.S. trade magazine Play Meter: "The relative success of Demon Attack in the market confirms to us the number of avid Pheonix fans who are buying Demon Attack to play Pheonix.

"With Atari's introduction of the authentic game, the presence of Demon Attack in the marketplace is confusing to the consumer."

Atari hopes to win an injunction against further sales of the game. The U.S. giant is also seeking an injunction against Colecovision Atari Expansion Module, which will allow Colecovision owners to play Atari software on their machine.



CHEF IS IN A PICKLE!

M NETWORK

Peckish? Then lick your lips because its Burger Time.

A nice thick 'n' juicy quarter pounder with all the trimmings is enough to satisfy the largest of appetites and also provide hours of scrumptious entertainment on your Atari VCS.

It's based on the hit arcade game and you play the harassed chef running through the multi storey maze trying to assemble the ingredients for your super-burger.

The good guys in this culinary caper are the seeded buns, the meat patties, the lettuce leaves and the pepper — but watch out for the menacing sausages who have legs and are out to get your little chef, the pickles too can spoil your burger.

The way to deal with these unwanted morsels is to crush them by dropping burgers on them or stun them with a quick shake of the pepper pot. When you have assembled your burger you can go on to the next wave.

Burger Time is one of the new M Network of games from Mattel, the makers of the Intellivision machine, for the Atari VCS.

The games are due to go on sale in the 'late spring' or 'early summer' although delivery dates are notoriously flexible in the video games business.

If we are not too certain about the "when" of these games we at least know a little bit more about the "how much" and there is some good news to report here.

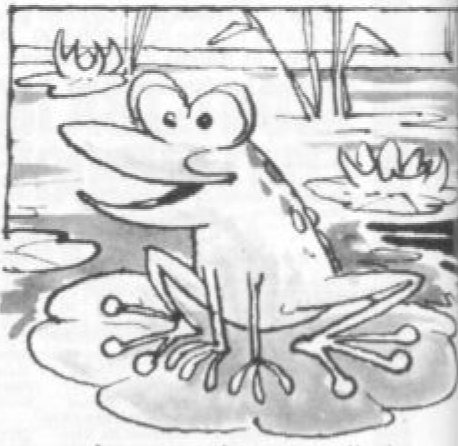
Mattel are set to raise the competition's eyebrows with prices starting as low as £10.95 and going up to £19.95.

Other highlights of the M Network include versions of the hit Intellivision games Lock n'Chase, Tron Deadly Discs, Advanced Dungeons and Dragons and Star Strike.

Competition for Atari's Soccer cartridge is provided by International Soccer with a pitch which scrolls up and down the screen. Two space shoot outs are featured in the shape of Space Attack and Astroblast.

Loco-Motion challenges you to frenziedly build a rail system before the train arrives and crashes killing the passengers.

Six original games written just for the M Network include Dark Cavern, a Berzerk type game, the Adventures of Tron, a classic adventure game called In Search of the Golden Skull, a tank attack



game for two players called Armor Ambush, Frogs and Flies — similar to the Intellivision game Frog Bog, Air Raiders and Computer Revenge, in which you defend Earth from a barrage of alien missiles.

Intellivision owners will also be able to play Burger Time as Mattel are producing a version of the game for their own machine which will go on sale in the U.S. later this year.

This will also eventually be available in the UK though probably not until the end of the year.

PICK-AXE PETE HUNTS FOR GOLD

PHILIPS G700 VIDEOPACS

Philips G700 owners can look forward to two new Videopacs this month introducing Pick Axe Pete and a new chess challenge.

Pick Axe Pete hopes to strike it rich in the Misty Mountains. There's gold in them thar hills and Pete intends to be the man to find it.

You can join him on his adventure as he seeks the gold – leaping over bouncing boulders, finding hidden keys to get through locked doors, and climbing up ladders which have the dangerous habit of disappearing from time to time.

Chess fans have also been included in this months releases with six skill level chess challenge.

One of the six levels is a simulation of tournament chess. The computer imposes a time limit for its moves. An interesting feature is that you can follow the thinking process of the computer on your screen. You play by keying in the co-ordinates of your moves.

Videopac Chess complies with all the major rules of chess, including castling, promotion, capturing *en passant* etc. If you make an illegal move, the computer will refuse to execute it.

Other good news for Philips games fans is that the big American manufacturer Imagic are about to launch two of their best selling titles – Demon Attack and Atlantis for the G7000.

Prices have yet to be confirmed, the games will be in the shops before the end of April.

Illustrations: Jon Davis and Terry Rogers

VIDEO REVOLUTIONARY

VECTREX

The first "all in one" video games system is about to go on sale the UK. Called the Vectrex it is manufactured by giant U.S. toy firm Milton Bradley, the people who brought you Dark Tower and Big-Trak.

The machine's main selling point is the TV style monitor which comes with the more usual games consol — so you don't need a TV to play.

The monitor is small and nicely designed, with a nine inch screen. Compact, with an absence of wires and leads, the Vectrex takes its name from the Vectre graphics screen, a hi-res display system incorporated in some arcade games like Asteroids and Tempest.

This graphics system represents all shapes as geometrical line drawings which shine out of the screen very brightly.

This means the Vectrex version of Asteroids – which is called Mine Storm – is a most accurate simulation of the arcade original.

Although this is fine for Asteroids fans like myself the graphics system is very limited when it comes to representing other types of games.

Hyper-chase for example, which is a scrolling screen car chase game, had very unconvincing graphics compared with similar games on the Intellivision and Colecovision.

Again on the minus side, the Vectrex only has black and white screen displays although transparent screen-overlays are supplied with each game to simulate colour – none too effectively in my opinion.

Although some of the games had disappointing graphics they still played well. Vectrex Scramble recreates all the addictiveness of this popular arcade game with authentic sound effects.

Rip-Off is a gem of a game incorporating some elements of Defender. You patrol a hexagon shaped space sector containing several diamond-shaped ships which the aliens attempt to dash in and steal. I played this one for over an hour!

A very neat arcade style controller is a strong point of the Vectrex. A responsive, if a little bit small, the joystick is mounted on a plinth with four buttons for other movement and, of course, fire commands.'

The Vectrex will go on sale in May at around the £140 mark. You get the Mine Storm game as an added bonus.

The company is currently negotiating with high street shops Dixons and Greens so you won't have to travel far to buy one! Twelve games will be available at £19.95 each.

About 30 cartridges will be available for the Vectrex by the end of 1983.

As well as new games these releases will also include some educational cartridges although no information is available about these as yet.

The news is not quite so good on the independent software front as people like Imagic and Activision have not announced plans to support the Vectrex as yet.



This is the Vectrex, the first "all-in-one" video games system.

MORE ON THE STICKS

POINTMASTER

The Discwasher Pointmaster is the latest addition to the bewildering range of gourmet joy sticks now coming into the U.K.

I was slightly put off by the flimsy plastic construction of the stick. I couldn't imagine it standing up to my bad tempered style of play — being thrust down in anger when I lose my last Pacman ten points away from my high score.

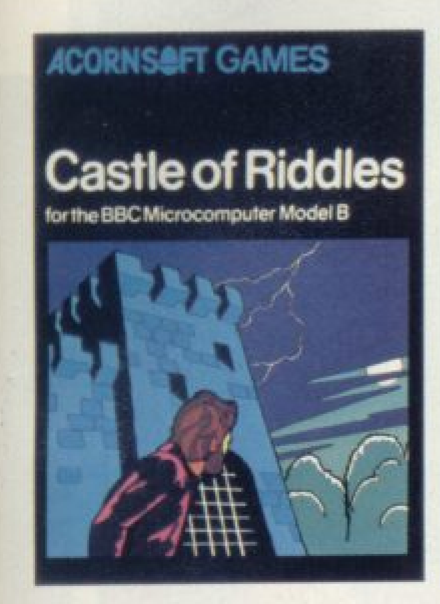
However, for responsiveness the stick scored as highly as either of the Wico sticks featured in last month's *C&VG* tests.

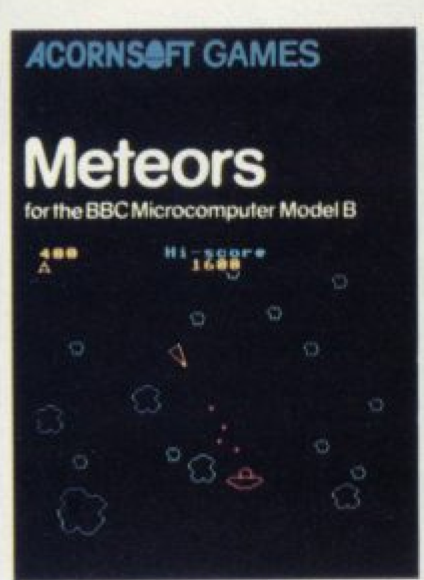
The fire button was sharp but a little heavy, clicking unnecessarily every time you released a missile.

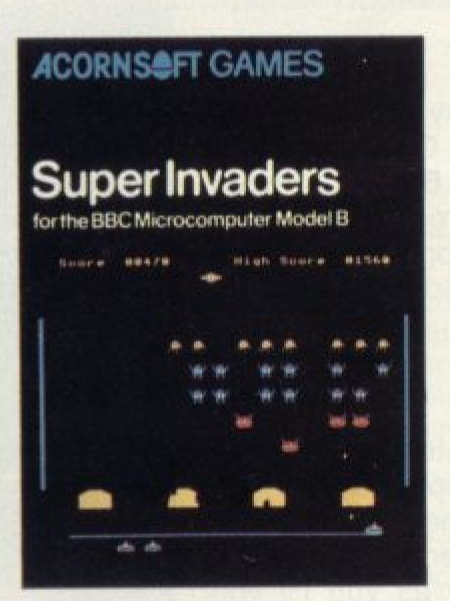
Pricewise the Pointmaster is a good buy, retailing at £14.95 — a good ten pounds cheaper than the Wico sticks.

New products in the pipeline from Discwasher include a rapid fire button, an up graded Pointmaster, a software disc-drive and cassette recorder cleaning kit.

1 Pacman	Atari VCS	Atari
2 Defender	Atari VCS	Atari
3 Space Invaders	Atari VCS	Atari
4 Starmaster	Atari VCS	Activision
5 Frogger	Atari VCS	Parker Brothers
6 Demon Attack	Atari VCS	Imagic
7 Star Raiders	Atari VCS	Atari
8 Empire Strikes Back	Atari VCS	Parker Brothers
9 Berzerk	Atari VCS	Atari
10 Pitfall	Atari VCS	Activision







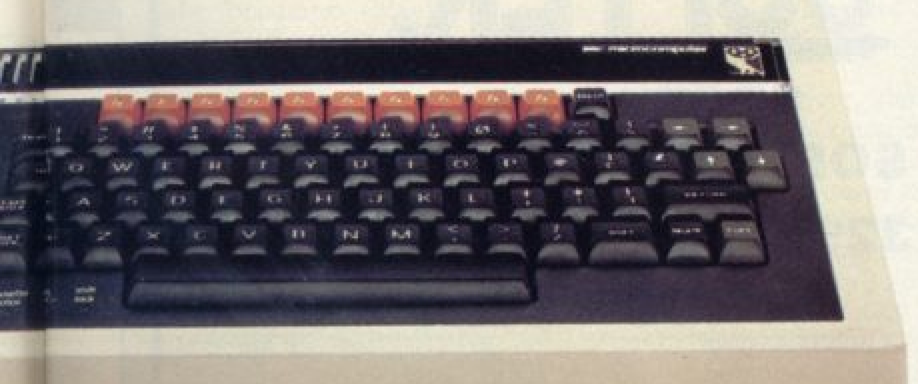
treasure you find along the way.

Meteors (price £9.95) is a game where you have to manoeuvre your laser-ship through a hail of meteors, smashing them with your laser bolts as they hurtle towards you on all sides. Complete with sound effects and table of Hi-Scores.

Super Invaders (price £9.95) is a fight against invading aliens. The only way to resist and avoid subsequent annihilation is to destroy the aliens before they land. You have three mobile launchers whose hyper-velocity missiles will instantly vaporise their target on impact. This game includes high-score, and is fully compatible with either keyboard or joysticks.

Understanding computers.

Peeko-Computer (price £9.95) simulates the operation of a simplified microcomputer in order to teach the fundamentals of machine-code programming. It comes complete with a 16 page instruction manual including exercises and examples, and the cassette features five demonstration Peeko-Computer programs.



How to get Acornsoft programs.

If you're a credit card holder and would like to buy cassettes of the programs shown in this advertisement, or if you would like to know the address of your nearest stockist, just phone 01-200 0200.

Alternatively, you can buy the cassettes directly by sending off the order form below to: Acornsoft, c/o Vector Marketing, Denington Estate, Wellingborough, Northants NN8 2RL.

Also use this form if you would like to receive the current free Acornsoft catalogue.

Please allow 28 days for delivery.

☎ Credit Card Holders. Telephone 01-200 0200.

ACORNSOFT EDUCATION
Peeko-Computer
for the BBC Microcomputer Models A and B

To: Acornsoft, c/o Vector Marketing, Denington Estate, Wellingborough, Northants NN8 2RL.

Please send me the following:–

PROGRAM	PRICE	QUANTITY	TOTAL	(Code Acornsoft use only)
Tree of Knowledge	£9.95			SBE04
Word Hunt	£11.90			SBE05
Graphs & Charts	£17.45			SBX02/SBD02
Castle of Riddles	£9.95			SBG17
Meteors	£9.95			SBG13
Super Invaders	£9.95			SBG16
Peeko-Computer	£9.95			SBE02
		TOTAL		

I enclose PO/cheque payable to Acornsoft Ltd. Or charge my credit card.

Card Number__________
(Amex/Diners/Visa/Access (Delete)

Please send me the Acornsoft brochure ☐

Please send me the VIEW catalogue ☐

Name__________

Address__________

Postcode__________

Signature__________ CVG4

Registered No. 1524763 VAT No. 215 8123 85

ACORNSOFT

CHESS

Artificial Intelligence research is closely linked to chess programming in trying to help computers think like we do.

Researchers at Edinburgh University have subjected the King and Rook against King and Knight ending to detailed analysis to try and come up with a database giving the result and best move in every legal position.

Grandmasters usually believe the ending to be a draw but it is so complicated to play that in practice this is seldom the case.

King and Rook versus King and Knight endings (KRKN) would seem to be impossible task for the programmer trying to give his computer the best option every time.

At first sight, generating such a database is a hopeless task. Assuming that each player has an average of 10 moves in every position, there would be over 10 to the power 50 different variations to consider (up to the end of the game) before deciding on the best move in some positions.

However, the amount of computation involved can be hugely reduced by a well-established trick. This involves generating all the positions which are won for White (the side with the Rook) by working backwards from *terminal wins* — checkmates. All positions not generated by this process are drawn, except for a few positions where the Knight gives checkmate for Black!

As an example, figure 1 shows Black to move, checkmated or, in the jargon, *lost at depth zero.*

Incidentally, it is helpful fiction to consider positions where White has just taken Black's Knight without leaving the Rook *en prise* or giving stalemate as "checkmates". Any position from which White to move can legally play figure 1 must be a win in one move (i.e. at depth one).

Figure 2 is such a position with White to move, since White can now choose to play R-QR2 mate. Generating all checkmate positions (Black to move) is reasonable straightforward. Retracting every (legal) White move from each of those gives all *win at one ply* positions (White to move). There are between two and three million of these altogether, including figure 2.

Now consider reversing every possible last Black move in figure 2. Supposing Black last played his Knight from KN5 to KN3, then the previous position was figure 3.

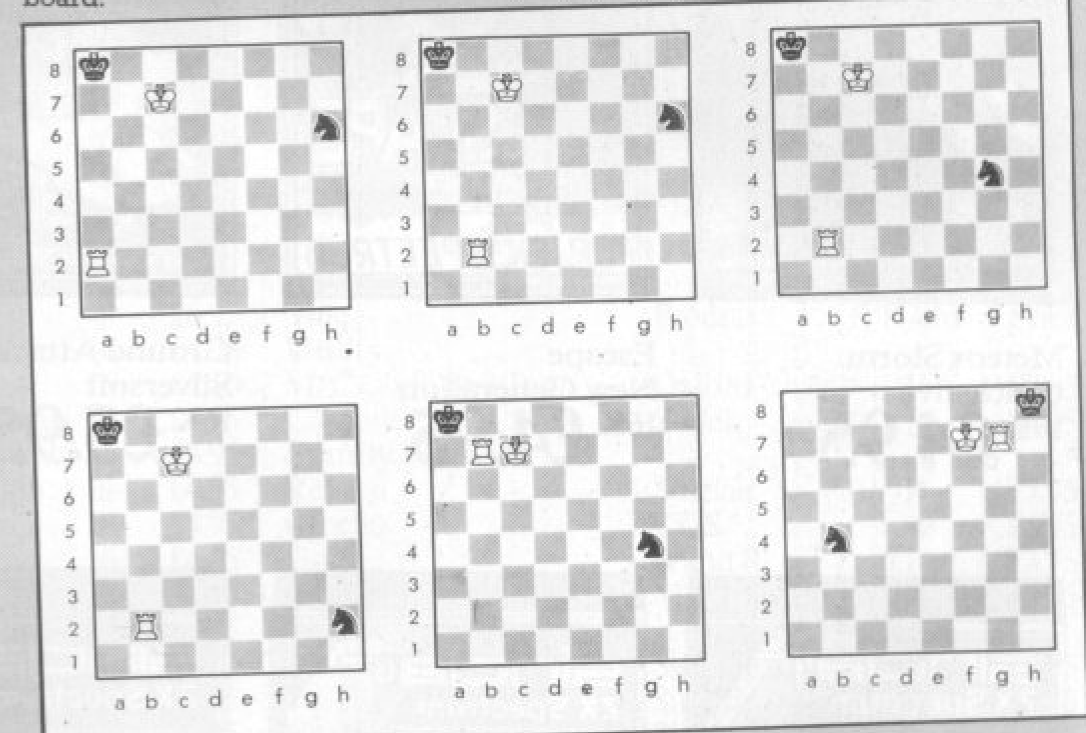
Checking every legal Black move from this position reveals that each one plays to a *lost in one ply* position (such as figure 2 or figure 4).

Hence, figure 3 can be classified as lost in two ply with Black to move. Working backwards a further step shows that figure 5 (with White to move) is a win for White in three ply, since White can choose to play R-QNZ giving figure 3.

Continuing in this way (with a few embellishments) eventually produced the desired list of all won positions, together with the depth of the longest winning variation and the best move for the side to move.

What makes the algorithm almost unworkable in practice is the huge number of possible positions even with only four pieces on the board.

Fortunately, the number can be greatly reduced making use of symmetry. For example, figure 6 is *the same as* figure 5 symmetrically, if the latter is imagined reflected about a vertical line between the two middle files of the board.



Hence, figure 6 must also be a win for White in three ply.

It turns out that it is only necessary to consider positions with the Black King on one of a set of 10 squares, such as QR1, QN1, QB1, Q1, QN2, QB2, Q2, QB3, Q3, Q4.

Moreover, there are only 462 legal King configurations with the Black King restricted to this triangle of squares (deleting cases where the two Kings are adjacent or on top of one another).

This allows the number of positions it is necessary to consider to be reduced to 462 x 64 x 64 = 1,892,352 with each side to move, many of which are illegal because of the position of the Rook or Knight. All other positions are equivalent to these by symmetry.

This is still a large number of course but manageable with a large computer.

Working at Bell Laboratories, Ken Thompson (the inventor of BELLE) has produced a database giving the necessary information for the 651,492 of these positions which are wins with White to move.

Thompson has also produced a table showing the number of won positions for White (to move) where it takes 1, 2, 3 . . . moves to give checkmate (or safely take the Knight.

There are 378,518 essentially different mates in one, allowing for symmetry, 95,450 mates in two and so on down to the deepest wins of all: two positions where White moves in 27 moves (53 ply).

For the record, these two positions are: a) WK on QR6, WR on KR3, BK on QBL , BN on QN5, and b) WK on Q8, WR on KR8, BK on QN1, BN on KN4.

By using Thompson's database, it is possible to find the best move in every winnable KRKN position — a remarkable achievement, yet profoundly dissatisfying.

The problem is solved but in a form which no human could possibly remember or understand.

The natural question to ask is whether the content of this huge database could be simplified down to a relatively few rules of play of the kind usually found in textbooks?

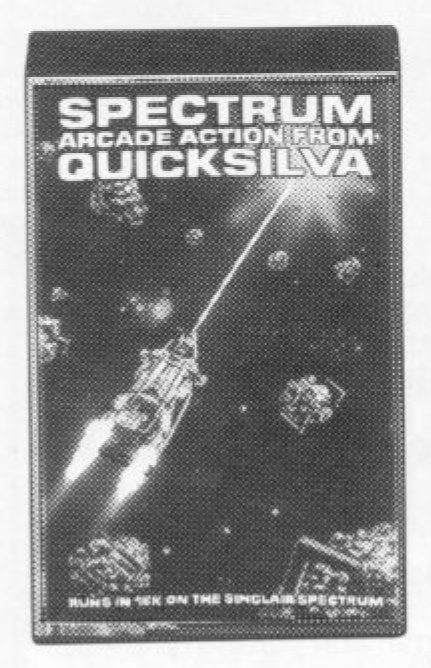
If it could, the resulting rules would have the merits of high precision (rather than the general advice, such as "try to separate the King and Knight" given in books) and guaranteed reliability.

Recent research has concentrated on synthesising just such rules, in a form which human chess players find is meaningful. I will return to this topic in a future article.

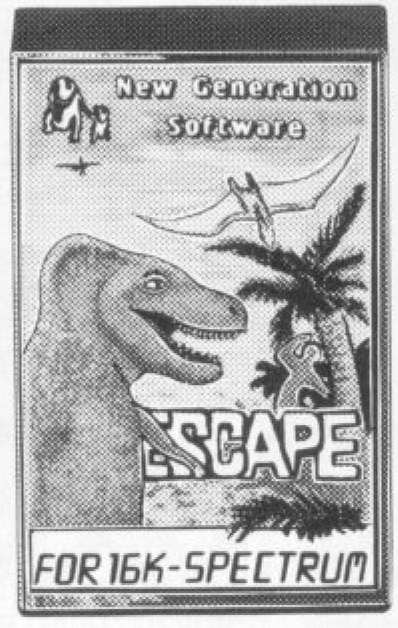
BY MAX BRAMER

You know that Spectrum software is easily affordable.

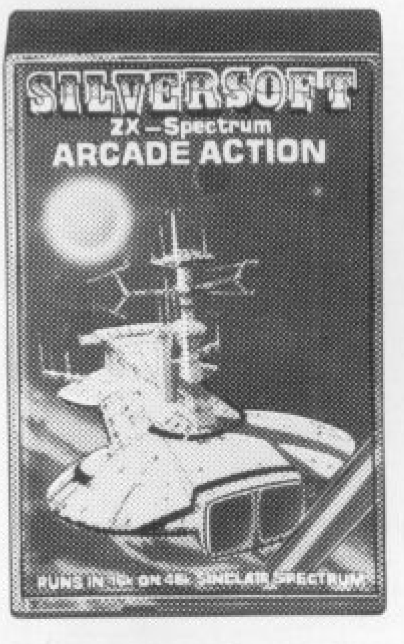
Now W.H. Smith make it easily available.



Meteor Storm
Quicksilva
16K £4.95



Escape
New Generation
16K £4.95



Ground Attack
Silversoft
16K £5.95



Orbiter
Silversoft
16K £5.95



Space Raiders
Sinclair
16K £4.95



Flight Simulation
Sinclair
48K £7.95



Horace Goes Skiing
Sinclair
16K £5.95



Battle of Britain
Microgame
48K £5.95

When it comes to software for the Sinclair Spectrum, there's no question who's right up your street. W. H. Smith.

Our range already covers some 65 programs. And it's growing fast.

So fast that every month we select and illustrate a Top Ten to keep you informed of the programs which are proving to be the most popular.

If on the other hand you've already got the Top Ten then why not come in and browse through the rest of our range.



Chess
Sinclair 48K
£7.95

The Hobbit
Sinclair 48K
£14.95 Double Tape plus book

W. H. Smith Spectrum Software Library
(all 16K programs will run on 48K machines)

Title	Producer	K RAM	Price
Arcade Games			
Space Intruders	Quicksilva	16	£4.95
Time Gate	Quicksilva	48	£6.95
Mined Out	Quicksilva	48	£4.95
Gulpman	Campbell	16	£4.95
Spectral Invaders	Bug-Byte	16	£5.00
Avenger	Abacus	16	£4.95
Meteoroids	Softek	16	£4.95
Planetoids	Sinclair	16	£4.95
Hungry Horace	Sinclair	16	£5.95
Mazeman	Abersoft	16	£4.95
Nightflight	Hewson	48	£5.95
Ground Force Zero	Titan	16	£5.00
Caterpillar	CDS	16	£5.95
Leapfrog	CDS	16	£5.95
Gobble-A-Ghost	CDS	16	£5.95
Centi-Bug	DK Tronics	16	£4.95
3D-Tanx	DK Tronics	16	£4.95
Penetrator	Melbourne Hse	48	£6.95
Cruising	Sunshine	16	£4.95
Arcadia	Imagine	16	£5.50
Derby Day	Computer Rentals	16	£5.95
Jackpot	Computer Rentals	16	£4.95
3D-Tunnel	New Generation	16	£4.95
Gobbleman	Artic	16	£4.95
Galaxians	Artic	16	£4.95
Sentinal	Abacus	16	£4.95
Cyber Rats	Silversoft	16	£5.95
Strategy Games			
Novotnik Puzzle	Phipps	16	£4.95
Chess	Artic	48	£9.45
Voice Chess	Artic	48	£9.95
Football Manager	Addictive	48	£6.95
Chess-The Turk	Oxford	48	£8.95
Adventure			
Labyrinth	Axis	16	£5.95
Planet of Death	Sinclair	48	£6.95
Inca Curse	Sinclair	48	£6.95
Ship of Doom	Artic	48	£6.95
Espionage Island	Artic	48	£6.95
The Orb	Computer Rentals	48	£5.95

Title	Producer	K RAM	Price
Utility			
M/C Code Test Tool	Oxford	16	£9.95
Compiler	Softek	16	£14.95
Family Games			
Reversi	Sinclair	16	£7.95
Othello	CDS	16	£5.95
Golf	R and R	16	£3.75
Conflict	Martech	48	£11.95
Practical			
Vu-Calc	Sinclair	16	£8.95
Vu-File	Sinclair	16	£8.95
Vu-3D	Sinclair	48	£9.95
Collectors Pack	Sinclair	48	£9.95
Club Record Controller	Sinclair	48	£9.95
Address Manager	Oxford	16	£8.95
Dietron	Custom Data	16	£4.75
Program Collections			
Shiva Special 1	Shiva	16	£5.95
Over The Spectrum 1	Melbourne Hse	16	£5.95
Over The Spectrum 2	Melbourne Hse	16	£5.95
Over The Spectrum 3	Melbourne Hse	16	£5.95

WHSMITH

Prices correct at time of going to press. Subject to availability. At selected branches only.


MAL FUNCTION
T. HITCH
SNAG JNR
SCREAMING FOUL UP
THE BUGS
THERE ARE THOSE NEW FANGLED ELECTRONIC BUGS I WAS TELLING YOU ABOUT!
SQUIGGLY POLYSTYRENE PACKING
MY NEW MICRO. GREAT!
OH BOY THIS DONKEY KONG GAME IS THE BEST YET!
JIGGLE!
JOGGLE!
THAT'S OUR NEW HOME. LETS WAIT 'TIL NIGHTFALL.
DARKNESS FALLS ..... OUR PROGRAMMER SNOOZES AND .... SOMETHING STIRS IN THE MICRO!!!
GRUHH!
HOW ARE WE GOING TO GET UP THERE?
GRUNT!
SSH! LISTEN THERE'S SOMETHING MOVING UP THERE!
NURKLE!
MUST BE A NEW MICRO INHABITANT, MAYBE DANGEROUS!
NONSENSE! THAT'S OUR PASSPORT TO THE TOP. LEAVE IT TO ME.
HEY YOU. THROW DOWN SOME OF THAT PACKING FOR US TO CLIMB UP ON ..... THERE'LL BE A BANANA IN IT FOR YOU!
I KNOW HOW TO DEAL WITH THESE TYPES!
ZZZZZZ
BOUNCE!
!
NEXT MORNING .... AT GROUND LEVEL.
YURK!
YAWN!
PHEW! THAT WAS A REALLY WEIRD DREAM ... ALL ABOUT A BUNCH OF BATTERED BUGS!
GROAN!
'LEAVE IT TO ME' HE SAID!
WHIMPER!

ARCADE



Baby Pac-Man leads you where no other video game or pinball has gone before!

So says the publicity material from Bally about their latest baby — an out and out arcade mutant!

At first glance this latest addition to the Pac-Family looks like an upright video cabinet — then you notice that there's a pinball playfield grafted on to the bottom. You get two flipper buttons — either on top or on the cabinet sides, just like a regular pin, plus a joystick controller for the video-maze.

Game action starts off in the Pacman maze with Pac-Baby munching his way around controlled by the stick. But there are no energisers to help fight the deadly ghosts. You must escape through the out-tunnels which lead to the pinball playfield. Here you earn the energisers and valuable fruits to enable you to score in the video-maze.

Spelling PACMAN by hitting drop targets earns you one energiser. Hitting the Hoop Loop ball spots earns you more. Spell FRUITS by hitting more targets and you get one of eight fruits. Spell TUNNEL and you'll increase your Pac-speed through the maze.

You get back into the maze by dropping your ball into one of the playfield's two saucers or when your ball drains away. Hitting the saucer will allow you an escape route to the playfield — but the "drain" closes the escapes and you'll have to beat the maze or be eaten to gain freedom of the machine once more.

You can earn an extra Baby by lighting up the centre arrows on the pinball playfield. The game begins and ends in the video-maze and you get three lives to play with.

It's yet another interesting innovation from Bally, and has been going down well in the U.S. and at trade fairs in this country. Watch out for it!

FOUR GAMES IN ONE

TIPS ON TRON

With a whole Walt Disney movie to work on, the designers of Tron — the video game were spoilt for choice in deciding what action to feature.

They got around the problem by offering four games in one. Each wave of Tron offers a challenge on every game. Two of these test reaction and co-ordination and two pattern-learning and recognition.

You can tackle the four games in any order but must go through all of them before starting a second wave.

A beginner should start with the easiest screen — which also offers the most points — Grid Bugs. These computerised spiders are to be blasted by Tron so he can reach the transporter, which will take him on to the MCP's next testing challenge.

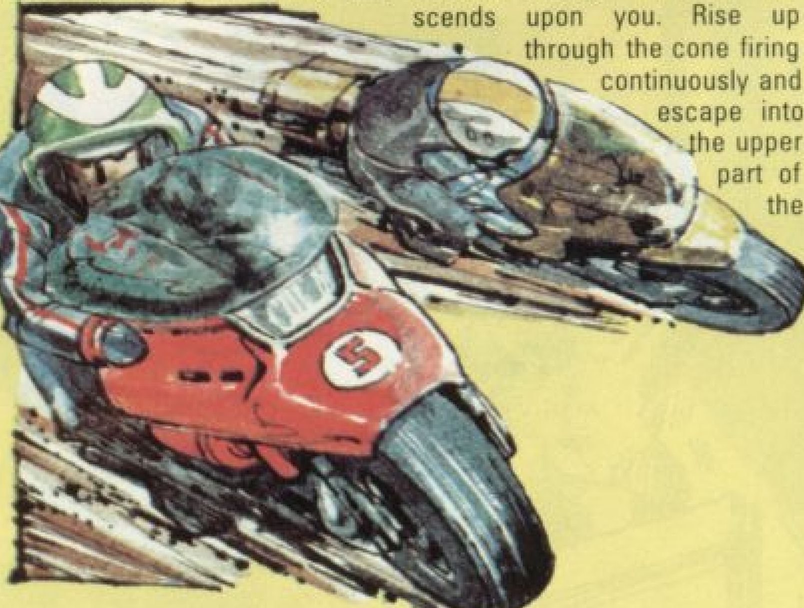
There is a time limit on this but use it all until the warning note sounds and you should net a nice total at 50 points a bug.

On wave one immediately blast your way to gain a position in front of a side entrance. On wave two, kill bugs directly above you before moving to the side entrance.

Wave three should be dealt with by moving to one side of the transporter and firing down on the bugs. Wave four comes in a figure "2" and Tron should escape right and up diagonally and blast through to the transporter's right entrance.

Wave five surrounds Tron with bugs. Fire to right as soon as they appear and escape in that direction.

The MCP Cone has to be blasted through while it descends upon you. Rise up through the cone firing continuously and escape into the upper part of the cone. If any part of it or its blocks touch you, you will be de-rezzed.



You score 1,000 points for entering the cone without touching the blocks and a further thousand is available for clearing all blocks.

Advanced cone waves are made more difficult as the speed of rotation and speed of descent increases.

Light cycle screens are really a question of experimentation to get the right pattern to survive while the yellow light cycles destroy themselves.

This is similar to the popular computer game of Surround, except that you control your speed. Use a fast burst on the trigger early on to set up your pattern and then slow down to avoid destruction while the enemy cycles crash.

Remember that the enemy cycles react to your movement, so a pattern, once memorised by you will give the same results every time. Push joystick and throttle forward as soon as you see the screen. Then you know you are the right route for each screen.

The tanks screen is difficult with each enemy tank needing to be hit three times to destroy it. Your advantages lie in rapid fire and rebounding shots off the walls of the maze — plus a chance to learn from your mistakes.

Again get in the habit of pushing off full throttle as soon as the screen starts and memorise patterns. All patterns once learnt and practised can be repeated successfully.

EVIL EMPIRE ATTACKED!

TAC-SCAN

A whole squadron is yours to command in Tac-Scan and a deadly evil galactic empire is the target.

Seven ships must be manoeuvred in the battles with the empire's own Annihilators and Stinger craft as laser beams flash across space.

A space warp tunnel will fling you into new areas of the galaxy and marvellous blue graphics on a black background, plus a real feel for perspective make this game more than just another space conflict.

Annihilators attack with rocket fire, Stingers aim lethal lasers while your Tac-Scan fighters can be reinforced by new craft as the squadron is depleted. This is achieved by pushing the Add Ship button or docking with additional ships which occasionally appear on the screen.

Manufacturers Sega claim, "More than 1,300 realistic space sound variations" and "unique spiralling, twirling perspective views".

It's certainly light years from the sort of space conflict, the invaders offered and controlling a squadron, as opposed to just one craft offers new scope, problems and challenges.



MEETING A STICKY END

ANTEATER

The anteater collects termites by probing through their tunnels with his long sticky tongue. Most of these odd animals seem to thrive on this method of dining out — but there are hidden dangers below the surface which wary anteaters should watch out for.

This particular breed of ants are swallowed easily enough when approached in the right manner — but should they happen upon anything other than the end of the anteater's tongue they will just chomp their way through it.

You play the anteater in this game using a joystick for controlling your direction and a retract button for rushing back to defend against danger nearer your snout.

Your animal stands by an ant-hole and sends his tongue down through a network of passages.

Other worries which live in these tunnels are worm which inch their way along carrying a noxious substance on their heads. These can only be eaten from behind.

Right at the bottom of the screen are the queen ants. These must be gobbled to kill all ants in the passageways. While you are busy gobbling, watch out for ants approaching along side passages and keep a wary eye out for worms. And beware, daylight is fading and the dreaded spiders will soon be out!

These will travel down your tongue on finding it and prevent retraction. When a spider is on your tongue, it's hell-for-leather down to the queen ants to try and save yourself.

BOARD WITH ARCADES?

BOARD GAMES

Just when we were used to seeing our arcade heroes turning up in TV games centres, game-watches, even movies, they have been launched in a new medium.

Now you can play Pacman — the board game. A range of six arcade board games has been launched by Milton Bradley and the first three out are: Pacman, Frogger and Donkey Kong.

A large board covered in beads is inhabited by four colourful plastic gobblers whose jaw mechanism allows them to swallow every bead they land on. Two ghosts also wander the board, trying to catch the Pac-men and retrieve the beads.

Going over an energiser bead allows you to catch and eat the ghosts, sending them back to their home at the centre of the board.

When all the beads have been eaten, the Pacman with most in his tray is the winner. Energiser beads, four tunnels and of course, dice also feature in this simple recreation of arcade gluttony — but I couldn't see any fruit!

Donkey Kong is also for four players, while Frogger challenges two players to be first across the road and river.

The games retail at around £9 and the series will be added to soon by Berserk, Defender and the 3D thrills of Zaxxon.

DRIVE FOR REALISM

POLE POSITION

Pole Position is simply the most exhilarating driving simulation game on the market.

Turbo featured better landscapes in its driving action but it can't match the speed, thrills and skill behind this new race game.

Your car is shown in front of you on the racetrack as you begin a qualifying lap. The countdown starts as soon as the lights flash, and away you go in first gear to try and beat the clock.

There are a few other drivers out to qualify as well and these may have to be overtaken at the end.

Cars turning corners are shown in every graphic detail of the manoeuvre. You must avoid them and the road signs or crash. Taking corners too quickly will result in you losing control of the car. Skidding off the track, crashing or hitting oil puddles slow you down.

A time below 73 seconds will put your car into the race proper and your starting grid position depends on that time.

Jostling with the other cars in the race, you must also take on the clock to notch a top time on the machine.

An accelerator pedal, two gears and a steering wheel are your controls in this game which comes in stand-up cabinet and cockpit design.

Time, score, lap and speed are shown on screen. No unnecessary frills but the plain graphics are sophisticated and believable and trying to hold a screaming curve or overtake, offers thrills to compare with the real racetrack.

"Q" UP FOR THIS ONE

Q*BERT

The lovable Q*bert begins to play on top of a 3D pyramid of brightly coloured blocks and he has also topped America's video games charts.

The game theme is obvious and its simplicity makes it all the more infuriating when Q*bert's mission ends abruptly.

With big eyes, a hollow-tube of a nose and not much else, Q*bert hops down his pyramid changing the colour of every block he lands on. When every block has been changed, the little creature hops off to start a new screen with a new pyramid.



The task is made more complicated by a series of bouncing characters who follow Q*bert down the pyramid dislodging him if they meet. There is also a deadly snake called Coily who will follow our hero back up the screen and try to squash or bite him.

Coily comes down screen as a grape shape, pauses and sets off on Q*bert's trail. To escape Coily, Q*bert must make use of two flying discs beside the pyramid. A well-timed leap onto one of these will return Q*bert to the pyramid top while sending Coily leaping off into space and instant death.

Subsequent levels require Q*bert to change the grid to first one intermediate colour and then the object colour, by two leaps on every cube.

There are nine levels in all and the diagonal leaps are achieved by a four-way joystick.

It can be played by one or two people. Q*bert seems to be an appealing creature, despite his habit of swearing a good deal, the graphics and colours are bright and extra Q*berts can be won for scores ranging from 6,000 to 11,000. The machine operator sets the level.



AVAST landlubbers! This here's a tale of high adventure on the high seas in the time of Lord Nelson and his famous fleet. Splice the mainbrace and set sail for an encounter of the salty kind with the scurvy seadogs of the Spanish navy.

Battle commences when the English ships of the line meet the Spaniards. English ships are shown on the right of the screen as inverse W, X, Y, and Z. The Spaniards are represented by inverse A, B, C and D.

The border around the playing area is marked out by x's which represent rocks and the graphic '+' represents wrecks. If you hit the border or a wreck then your ship will sink.

When a ship is hit by gunfire it gets a damage rating. Any ship sustaining a damage factor of more than seven can only move one space at a time in the direction required. When a ship's damage factor reaches more than nine it will sink.

The wind direction — which governs the movement of ships — can change at random. A ship cannot move against the wind and will travel further with the wind than at a tangent to it.

Some instructions and input prompts are displayed at the bottom of the screen during play. For example: what ship to move, damage factor for a ship etc.

Cannons are fired by using key '9'. Each ship in turn can fire before moving. Fire is always at ninety-degrees to the direction of travel. If an enemy ship is hit it will fire back automatically.

TRAFALGAR

BY PAT NORRIS

RUNS ON A ZX81 IN 16K

```
  3 LET P=PEEK (16396) + 256 * PEEK
 (16397)
  4 LET AC=1
  5 LET EEF=4
  6 LET SSF=4
  9 FOR G=1 TO 32
 10 PRINT "X";
 15 NEXT G
 20 FOR H=1 TO 14
 25 PRINT "X
           X"
 30 NEXT H
 35 FOR I=1 TO 32
 40 PRINT "X";
 45 NEXT I
 50 PRINT "WIND=
      1    "
 55 PRINT "SHIP=  COURSE=  DAMA
GE=    0 2    "
 60 PRINT TAB 25;"7 X 3"
 65 PRINT "INPUT COURSE(0 TO 7)
 OR    6 4"
 67 PRINT "9 TO ATTACK";
 68 PRINT TAB 27;"5"
 76 POKE P+115,21
 80 POKE P+207,21
 82 POKE P+287,21
 84 POKE P+379,21
 90 DIM Q(8)
 95 DIM S(8)
100 DIM L(8)
105 DIM C(8)
110 LET A=166
```

```
120 LET D=135
125 LET E=1
130 LET S(E)=A
135 LET L(E)=D
140 LET C(E)=3
142 IF E>4 THEN LET C(E)=7
145 LET Q(E)=0
150 POKE P+L(E),S(E)
160 LET E=E+1
165 IF E>8 THEN GOTO 205
170 IF E=5 THEN GOTO 190
175 LET A=A+1
180 LET D=D+66
185 GOTO 130
190 LET A=A+19
195 LET D=D-171
200 GOTO 130
205 LET W1=1
210 LET F=1
215 LET W=INT (RND*8)
217 IF F>8 THEN LET F=1
219 IF Q(F)>9 THEN GOSUB 2000
220 IF Q(F)>9 THEN LET S(F)=0
221 IF S(F)=0 THEN LET F=F+1
223 IF F>8 THEN GOTO 217
224 IF S(F)=0 THEN GOTO 217
225 IF AC>1 THEN GOTO 228
227 LET AC=1
228 GOSUB 500
230 GOSUB 920
231 IF M=9 AND AC=1 THEN LET XX
=F
232 IF M=9 AND AC=1 THEN
```

```
GOTO 600
 233 IF M=9 AND AC>1 THEN GOTO 2
30
 235 IF M=0 AND C(F)=6 THEN GOTO
 250
 236 IF M=6 AND C(F)=0 THEN GOTO
 250
 237 IF (M=1 OR M=0) AND C(F)=7
THEN GOTO 250
 238 IF (C(F)=0 OR C(F)=1) AND M
=7 THEN GOTO 250
 245 IF ABS (M-C(F))>2 THEN GOTO
 230
 250 LET R=3
 252 LET AC=1
 254 IF ABS (M-W)=3 THEN LET R=4
 256 IF ABS (M-W)=5 THEN LET R=4
 258 IF ABS (M-W)=4 THEN LET R=5
 260 IF Q(F)>6 THEN LET R=2
 262 IF Q(F)>7 AND Q(F)<10 THEN
LET R=1
 264 IF M=W THEN LET R=0
 269 IF R=0 THEN GOTO 405
 270 POKE P+L(F),0
 277 LET C(F)=M
 280 LET MV=0
 282 LET X=0
 284 IF M<3 THEN LET MV=MV-(34-M
)
 286 IF M=4 OR M=5 OR M=6 THEN L
ET MV=MV+(38-M)
 288 IF M=3 THEN LET MV=MV+1
 290 IF M=7 THEN LET MV=MV-1
 295 LET SX=1
 300 LET X=PEEK (P+L(F)+(MV*SX))
 315 IF X=21 OR X=61 THEN GOTO 3
31
 320 IF X>165 THEN GOTO 350
 321 IF SX=R THEN GOTO 385
 322 POKE P+L(F)+(MV*SX),S(F)
 325 POKE P+L(F)+(MV*SX),0
 328 LET SX=SX+1
 330 GOTO 300
 331 LET L(F)=L(F)+(MV*SX)
 333 POKE P+L(F),21
 335 GOSUB 2000
 336 LET S(F)=0
 340 LET Q(F)=10
 347 GOTO 217
 350 LET T=0
 352 IF X>165 AND X<170 THEN LET
 T=T+(X-165)
 355 IF X>187 THEN LET T=T+(X-18
3)
 356 LET L(F)=L(F)+(MV*SX)
 360 POKE P+L(F),S(F)
 361 IF S(T)>165 AND S(T)<170 TH
EN LET SSF=SSF-1
 362 IF SSF=0 THEN GOTO 1000
 363 IF S(T)>187 AND S(T)<192 TH
EN LET EEF=EEF-1
 364 IF EEF=0 THEN GOTO 1050
 365 LET S(T)=0
 370 LET Q(F)=Q(F)+INT (RND*7)+1
 375 IF Q(F)>9 THEN GOTO 332
 380 GOTO 405
 385 LET L(F)=L(F)+(MV*SX)
 387 GOTO 400
 400 POKE P+L(F),S(F)
 405 LET F=F+1
 410 LET W1=W1+1
 420 IF W1>8 THEN GOTO 430
 425 GOTO 217
 430 LET W1=1
 435 GOTO 215
 500 POKE P+567,S(F)
 510 POKE P+576,C(F)+28
 515 POKE P+585,Q(F)+28
 520 POKE P+534,W+28
 525 RETURN
 600 LET K=L(F)
 601 LET J=0
 602 LET Y=0
 603 LET AB=0
 605 IF C(F)=0 OR C(F)=4 THEN LE
T J=32
 610 IF C(F)=2 OR C(F)=6 THEN LE
T J=34
 615 IF C(F)=3 OR C(F)=7 THEN LE
T J=33
 620 IF C(F)=1 OR C(F)=5 THEN LE
T J=1
 621 LET AB=J
 623 LET U=0
 625 LET N=1
 630 LET V=1
 632 LET V1=1
 635 LET U=PEEK (P+K+(J*V1))
 645 IF U=0 THEN GOTO 661
 648 IF U=21 THEN GOTO 677
 650 IF (U=61 OR ABS (S(F)-U) <5)
AND N=1 THEN LET V=5
 655 IF (U=61 OR ABS (S(F)-U) <5)
AND N=2 THEN LET V=10
 657 IF V=5 OR V=10 THEN GOTO 66
1
 660 GOTO 700
 661 IF V=5 THEN GOTO 687
 663 IF V=10 THEN GOTO 900
 665 POKE P+K+(J*V1),27
 670 POKE P+K+(J*V1),0
 677 LET V=V+1
 679 LET V1=V1+1
 680 GOTO 635
 687 LET V1=1
 688 LET V=V+1
 690 LET N=2
 691 LET J=-AB
 696 GOTO 635
 700 IF U>165 AND U<170 THEN LET
Y=Y+(U-165)
 705 IF U>187 AND U<192 THEN LET
Y=Y+(U-183)
 707 LET F=Y
 710 IF V=1 OR V=6 THEN LET Q(Y)
=Q(Y)+INT (RND*7)+4
 715 IF V=2 OR V=7 THEN LET Q(Y)
=Q(Y)+INT (RND*6)+3
 720 IF V=3 OR V=8 THEN LET Q(Y)
=Q(Y)+INT (RND*5)+2
 722 IF V=4 OR V=9 THEN LET Q(Y)
=Q(Y)+INT (RND*4)+1
 724 IF V=5 OR V=10 THEN LET Q(Y
)=Q(Y)+INT (RND*3)+1
 730 IF Q(Y)>9 THEN GOTO 740
 732 IF AC=2 THEN LET F=XX
 733 IF AC=2 THEN GOTO 227
 735 IF AC=1 THEN GOTO 760
 740 POKE P+L(Y),21
 742 IF U>165 AND U<170 THEN LET
 SSF=SSF-1
 743 IF SSF=0 THEN GOTO 1000
 744 IF U>187 AND U<192 THEN LET
 EEF=EEF-1
 745 IF EEF=0 THEN GOTO 1050
 746 POKE P+L(Y),21
 750 LET S(Y)=0
 755 GOTO 900
 760 LET AC=2
 761 GOTO 600
 762 LET K=L(Y)
 765 IF N=1 THEN GOTO 769
 766 LET N=1
 767 GOTO 775
 769 LET N=2
 775 IF N=1 THEN LET V=1
 780 IF N=2 THEN LET V=5
 782 LET V1=1
 783 LET J=-J
 785 GOTO 680
 790 LET F=F+1
 795 GOTO 217
 900 LET F=XX
 905 LET AC=2
 910 GOTO 217
 920 INPUT M$
 930 IF LEN M$<>1 OR CODE M$<28
OR CODE M$>37 THEN GOTO 920
 935 IF CODE M$=36 THEN GOTO 920
 940 LET M=VAL M$
 950 RETURN
1000 CLS
1005 PRINT "  AN ENGLISH WIN"
1010 PRINT
1020 PRINT "ANOTHER GAME?"
1025 INPUT O$
1026 IF LEN O$=0 THEN GOTO 1025
1027 IF O$(1)="Y" THEN GOTO 1032
1030 IF O$(1)="N" THEN NEW
1031 GOTO 1025
1032 CLS
1035 RUN 5
1050 CLS
1055 PRINT "  A SPANISH WIN"
1060 GOTO 1010
2000 IF S(F)>165 AND S(F)<170 TH
EN LET SSF=SSF-1
2010 IF SSF=0 THEN GOTO 1000
2015 IF S(F)>187 AND S(F)<192 TH
EN LET EEF=EEF-1
2020 IF EEF=0 THEN GOTO 1050
2030 RETURN
2050 SAVE "TRAFALGAR"
2055 GOTO 1
```

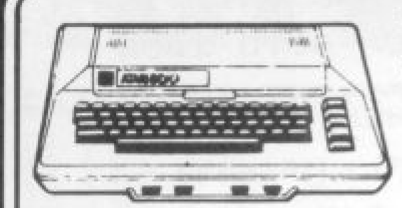












1. 400 (16k) + basic + recorder + joystick + 5 blank cassettes + demos/games	£239
2. 400 (48k) + all above items	£324
3. 800 (48k) + all above items	£485
4. 800 (48k) + basic + disk drive + joystick + 3 blank disks + demo disk	£720

Dragon 32	£199	Spectrum (48k)	£175
Epson HX20	£462	Oric (48k)	£169
Vic 20	£129	Sord M5	£189
Commodore 64	£339	Sharp MZ80A	£449
ZX 81	£49.95	Sharp MZ80B	£899.00
ACE	£89.95		

SKYSCRAPER

BY KEITH CAMPBELL

RUNS ON A DRAGON 32 IN 32K

You are a pilot on a life or death mission. Can you bomb a clear pathway through the city of skyscrapers wide enough for your aircraft to land?

The silhouette of a skyscraper city is drawn on the screen; and at the top is a plane, which traverses from left to right, its altitude reducing on each traverse. If it hits a skyscraper the game ends.

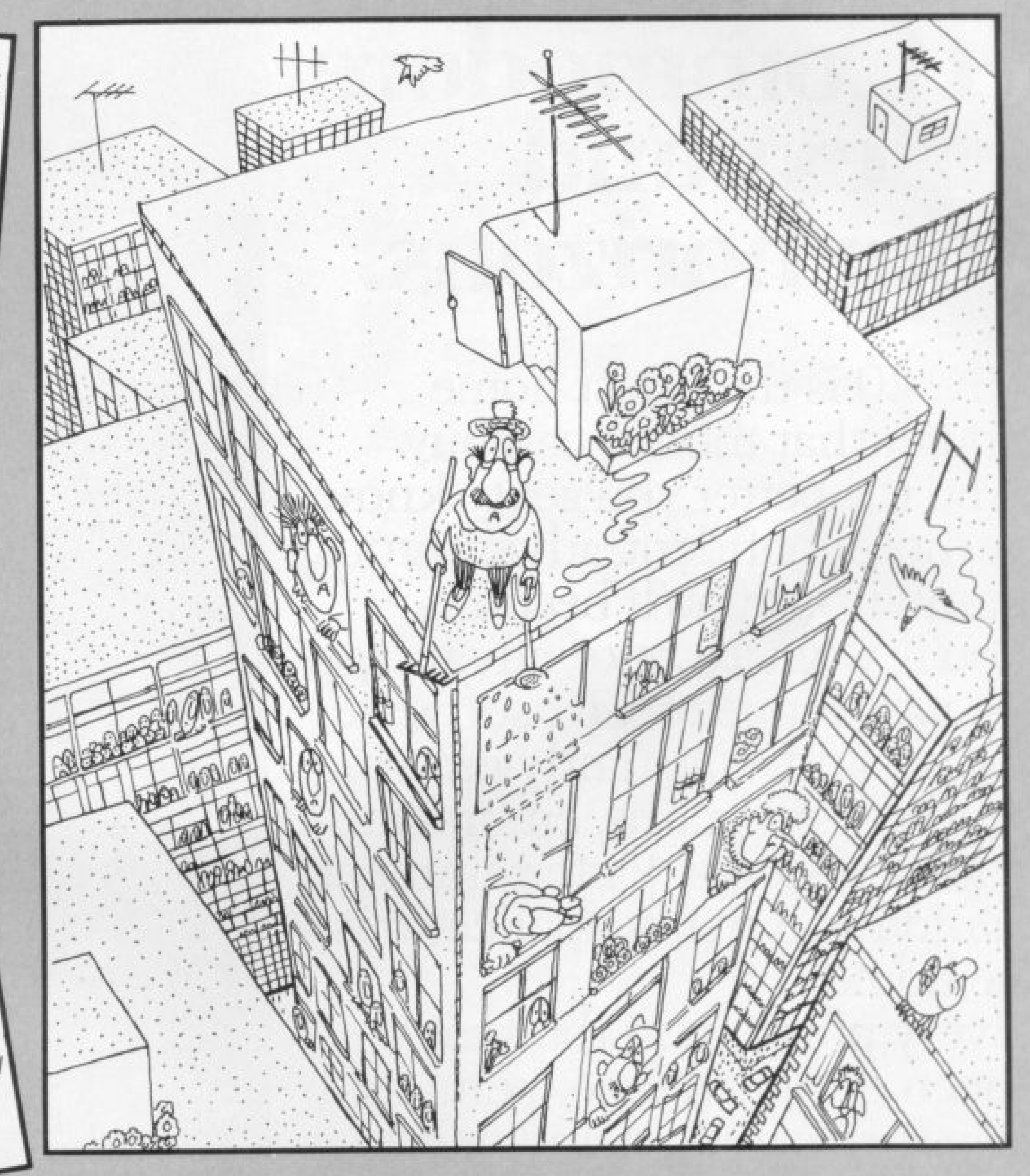
Bombs may be dropped by pressing the space bar.

If a bomb hits a building it reduces it in height by one story.

The plane may be raised one line on the screen five times only, by pressing the 'UP' arrow.

A variable difficulty level is provided in the speed of the plane, which may be 1-5. At speed 1 (fast) each hit scores five points, and at speed 5 (slow) each hit scores one point, etc.

A high-score feature is available, and retains the current highest score whilst the machine is switched on and the game loaded, provided it is not re-RUN.



VARIABLES
- I,J,K: Loop counters
- PL$: Plane graphic
- NP$: Blank, same size as plane
- BO$: Bomb graphic
- PO: Current 'PRINT@' position of plane
- BD: 0 if no bomb in flight, else = 1
- SP: The start position (PRINT@) of a bomb
- RA: The current no of raises left
- A: The points value of each bomb hit
- GS: A delay factor affecting plane speed
- CT: The counter which uses the delay factor
- HS: The current high-score
- SC: The player's current score

Notes on Peeks and Pokes

To help convert to other machines, it is necessary to explain the PEEKS and POKES. First, be aware that the Dragon screen is 32 characters wide and 16 high. Print positions start at 0 (top left) and end at 511 (bottom right).

Video memory starts at decimal RAM address of 1024. Thus RAM address 1025 = PRINT@ position 1. All PEEKS and POKES in the listing are directed at the screen.

```
1 CLS:PRINT@35,"SKYSCRAPER !":FO
RI=0TO1000:NEXT
2 CLS:PRINT"YOU ARE THE PILOT OF
 A BOMBER.  YOUR PLANE IS CRIPPL
ED AND YOU  CAN ONLY CIRCLE THE
CITY OVER   WHICH YOU FIND YOURS
ELF"
3 PRINT"YOU ARE RUNNING OUT OF F
UEL, ANDTHE ONLY WAY YOU CAN LAN
D IS TO FLATTEN THE CITY BY BOMB
ING IT. YOU CAN RAISE YOUR PLANE
 5 TIMESONLY BY PRESSING THE UP
ARROW"
4 PRINT"YOU CAN DROP A BOMB BY P
RESSING THE SPACE BAR.":PRINT:PR
INT"PRESS ENTER TO COMMENCE";:IN
PUTA$
5 CLS:PRINT"ENTER YOUR PLANE SPE
ED.":PRINT:PRINT"1 IS FAST":PRIN
T"5 IS SLOW";:INPUTS$
6 S=INT(ABS(VAL(S$))):IFS<1ORS>5
THEN5ELSEGS=S:A=6-S
10 FORI=1024TO1535:POKEI,128:NEX
T
20 FORI=1504TO1535:J=I
30 FORK=0TORND(12):POKEJ-K*32,14
3:NEXT:NEXT
40 PL$=CHR$(142)+CHR$(139)+CHR$(
130)
50 NP$=STRING$(3,CHR$(128)):PO=3
2:BO$=CHR$(129):RA=5:SC=0
55 PRINT@0,"SCORE:";:PRINT@17,"H
I-SCORE:";HS;
60 PRINT@PO,PL$;:PRINT@PO-1,CHR$
(128);
65 CT=0:IFPO>473THEN2000
70 Z$=INKEY$:IFBD=1ANDZ$=" "THEN
100ELSEIFZ$="["ANDRA>0THENIFPO>6
4THENPRINT@PO,NP$;:PO=PO-32:RA=R
A-1
75 CT=CT+1:IFCT < GS THEN70ELSEP
O=PO+1
80 IFPEEK(PO+1026)=143THENCLS:PR
INT@150,"SPLAT!":PRINT:PRINT"YOU
  CRASHED INTO A SKYSCRAPER!":PRI
NT"YOUR SCORE WAS:-";SC:GOSUB250
0:PRINT"DO YOU WANT ANOTHER GO";
:INPUTU$:IFLEFT$(U$,1)="Y"THEN5E
LSEEND
90 IFBD=1THENGOSUB1000:GOTO60ELS
EGOTO60
100 IFBD=1THEN110ELSEBD=1:SP=PO:
GOSUB1000:GOTO60
110 GOSUB1000:GOTO60
1000 IFSP+32>479THENBD=0:POKESP+
1024,128:RETURNELSEIFPEEK(SP+32+
1024)=143THENPOKESP+32+1024,128:
SOUND50,2:BD=0:SC=SC+A:PRINT@6,S
C;:PRINT@SP,CHR$(128);:RETURNELS
EPRINT@SP+32,BO$;:PRINT@SP,CHR$(
128);:SP=SP+32:RETURN
2000 CLS:PRINT"FANTASTIC!":PRINT
"YOU HAVE RAZED THE CITY TO THE
  GROUND!":PRINT:PRINT"YOUR SCOR
E WAS:";SC:GOSUB2500
2010 INPUT"ANOTHER GAME";A$:IFLE
FT$(A$,1)="Y"THEN5ELSEEND
2500 IF HS < SC THENLETHS=SC
2510 RETURN
```

Illustration: Dorian Cross

Let Commodore expand your horizons.

VIC 20 is the finest home computer that money can buy.

And the better you get to know it, the more confident, adventurous and ambitious you'll become.

You'll want to take advantage of the vast range of VIC software: a superb and constantly-growing selection of programs, embracing business systems, entertainment, education and many applications in the home.

Every program in the series has been designed by experts, and chosen for its quality and value for money.

VIC business software covers a wide range of applications, including spread-sheet analysis, stock control, information handling and word-processing.

A mind-blowing range of games including Scott Adams' world-famous 'Adventure' series.

Advanced space games, including the sophisticated 'Omega Race'.

Learn subjects as diverse as English Language, programming, and biology.

And 'home' software ranges from IQ tests to Robert Carrier menus.

In addition, there is a range of VIC software, like programmers' aids and graphics packages–



to add to your understanding and enjoyment of computers and computing.

There's even a special 'VicSoft' Club for VIC 20 enthusiasts, with many advantages including special offers to club members.

VIC software will expand your horizons. And your mind.

PRICES RANGE FROM £4.99 to £24.95 INC. VAT.



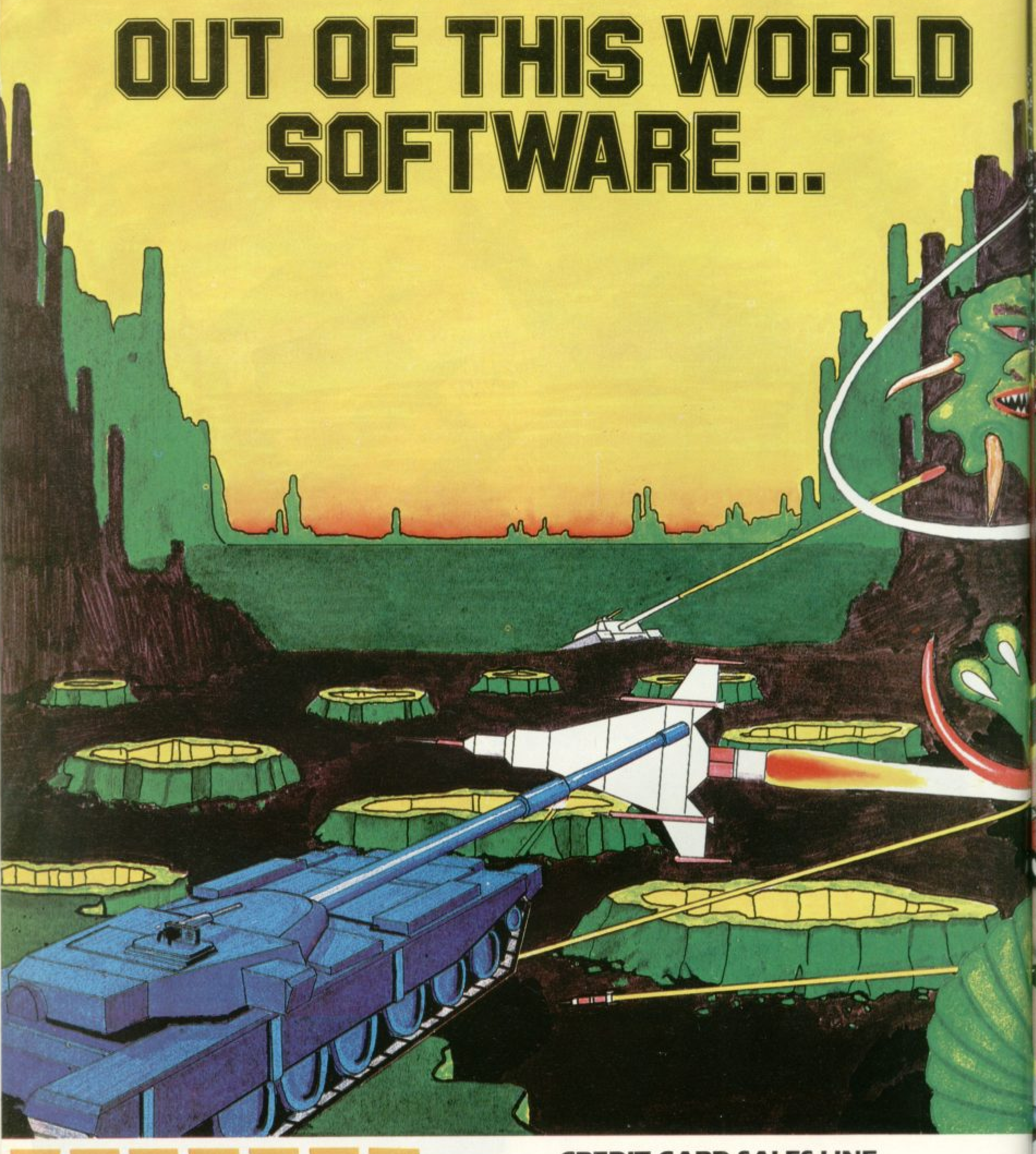
For more information, a catalogue of VIC software and details of your local retailers or dealers please phone or complete the coupon and send to:
The Commodore Information Centre,
675 Ajax Avenue, Slough, Berkshire SL1 4BG.
Telephone: Slough (0753) 79292.

Name ______________________
(MR./MRS./MISS)
Address ______________________

____

Postcode ______________________

VCCVG0483



PLEASE SEND ME .... @£ ....

PLEASE SEND ME .... @£ ....

PLEASE SEND ME .... @£ ....

PLEASE ADD ON 50p for P&P

I enclose cheque/P.O. payable to

DK Tronics total .... or debit my

Access/Barclaycard

NAME .... ADDRESS ....

....

SIGNATURE ....

CREDIT CARD SALES LINE
(0493) 602453 (24 hrs)
Quoting your Access or Barclaycard number
DK Tronics software is also available from all good software outlets.

3D TANX—Pit your wits against the enemy Tanx. This is a full feature game with fantastic 3D balistics. **ONLY £4.95**
3D SPAWN OF EVIL—Eliminate the spawn before it matures to full attack potential. The most spectacular 3D space game ever written for this 16K Spectrum. **ONLY £4.95**
CENTIPEDE—Shoot down the ever menacing Centipede before it shoots you. One of the most addictive games for the Spectrum **ONLY £4.95**

For more information send S.A.E. for our full colour brochure.



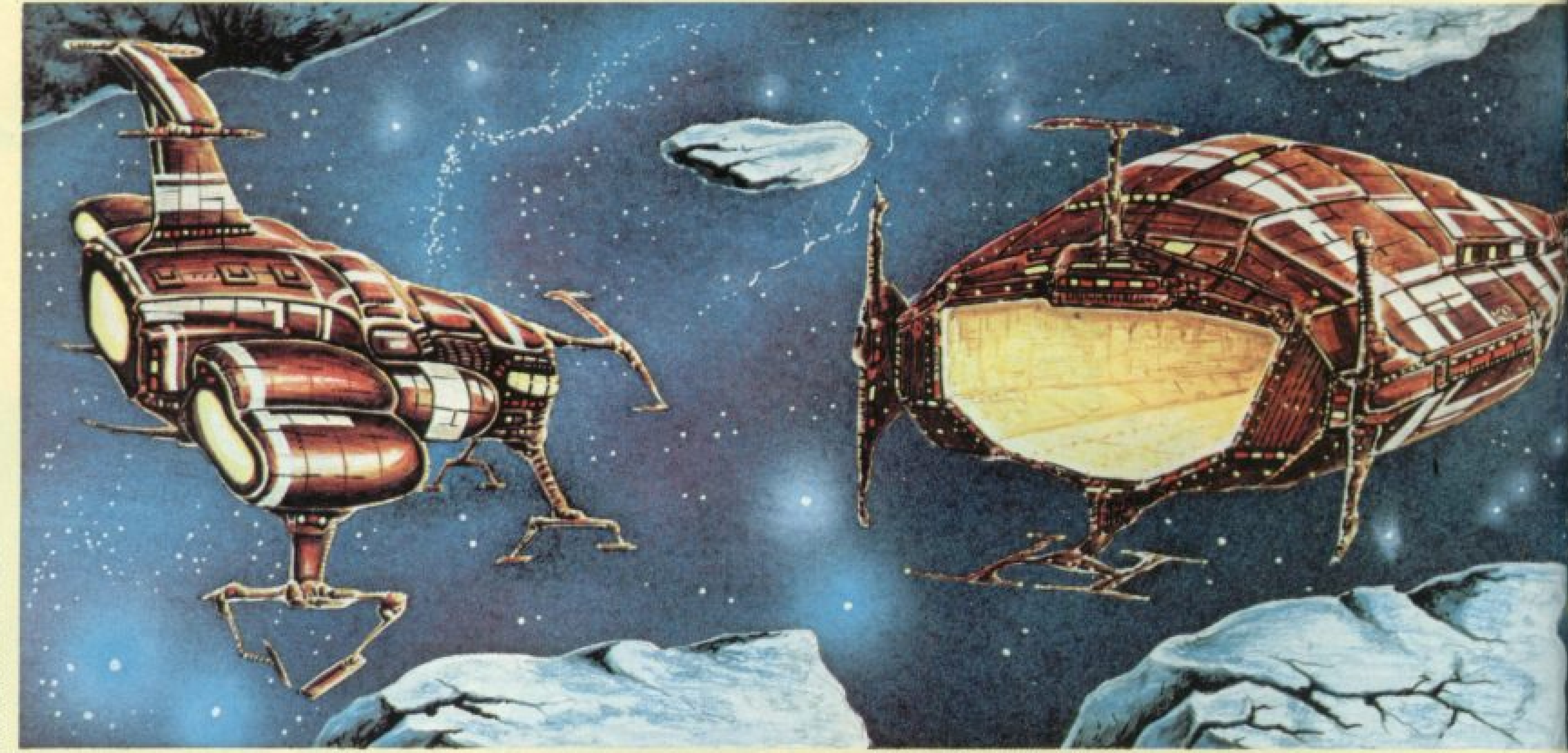


Illustration: Dorian Cross

Space, as you well know, is a dangerous place. And we at *Computer and Video Games* are here to bring you all the dangers we can find! This is a subtle new twist to an old favourite.

You are the pilot of a space craft on route to a refuelling station. Blocking your way is a field of stationary asteroids. You must dock with the refuelling station — otherwise you will not be able to continue your journey across the universe. Can you navigate the maze of rocks and reach safety? Once you have traversed a Stasteroid field and reached the refuelling zone another is set up by the computer.

There are some flashing sequences in the program that some people may find disturbing. To remove these sequences simply omit the following lines or statements. Line 2520: omit LET 1=USR scr. Line 3020: omit both LET 1=USR scr. Delete lines 3550 to 3570, 4020, 4320, 4110 to 4140, 4220 to 4250.

STA

BY M. J. LEVER

```
100 REM
110 CLEAR 64999: REM For m/c
120 GO SUB 9000: REM Instr
130 GO SUB 8000: REM Skill
140 GO SUB 7000: REM Vars
150 GO SUB 6000: REM Screen
160 GO SUB 5000: REM Intro
170 GO TO  1000: REM Start

1000 REM

1010 FOR a=1 TO 28
1020 PRINT AT od,a-1;"   ": LET
c$=SCREEN$ (d,a+1)+SCREEN$ (d,a+
2): IF c$="" THEN GO TO 3000
1030 PRINT AT d,a;b$(r+1): BEEP
.001,d+20: BEEP .001,40: LET od=
d: LET i$=INKEY$: LET d=d+(i$="z
" AND d<21)-(i$="1" AND d>1)
1040 LET fuel=fuel-1: LET sc=sc+
1: LET r=NOT r: PRINT AT 0,10-LE
N STR$ sc;sc;AT 0,16;"00"( TO 3-
LEN STR$ fuel);fuel: IF NOT fuel
 THEN GO TO 2500
1050 NEXT a

2000 REM Reached End of Screen

2010 PRINT AT od,a-1;" ": FOR x=
1 TO 5: BEEP .05,0: BEEP .05,1:
NEXT x: IF od<>p THEN GO TO 2100
2020 FOR x=1 TO 28+INT (RND*(lev
+1))
2030 PRINT AT p,29; INK 2;"[graphic]";
INK 6;"[graphic]": BEEP .02,x+5: LET fue
l=fuel+1
2040 PRINT AT p,29;b$(1,4 TO );
INK 2;"[graphic]": BEEP .02,30-x: PRINT
AT 0,19-LEN STR$ fuel;fuel: NEXT
 x
2100 LET sect=sect+1: IF sect=11
 THEN GO SUB 3500
2110 GO SUB 7200: GO SUB 6020: G
O TO 160

2500 REM Ran Out of Fuel
```

```
2510 PRINT AT 0,16; INK 6; FLASH
 1;"000"
2520 INK 8: PAPER 8: FOR x=od+1
TO 21: POKE attr,64+INT (RND*8)*
8: LET l=USR scr: PRINT AT x-1,a
;"   ";AT x,a+1;"[graphic]": BEEP .01,5
0-x: BEEP .01,51-x: NEXT x: POKE
 attr,72: LET l=USR scr
2530 POKE 23693,71: FOR x=1 TO 5
: PRINT AT 21,a+1; INK 5;"[graphic]": B
EEP .01,20: PRINT AT 21,a+1;"  "
: BEEP .02,20: NEXT x
2540 POKE attr,71: LET l=USR scr
: FOR x=1 TO 10: PRINT AT 21,a+1
;"[graphic]": BEEP .01,x*5: NEXT x
2550 PRINT AT 21,a+1;"  "
2560 POKE 23693,71: FOR x=1 TO 2
00: NEXT x
2570 GO TO 4000

3000 REM
3010 FOR x=1 TO 20: PRINT AT d,a
+1; INK 6;"[graphic]": BEEP .01,25: PRI
NT AT d,a+1; INK 1;"[graphic]": BEEP .0
1,26: NEXT x
3020 FOR x=20 TO 10 STEP -1: POK
E attr,80: LET l=USR scr: PRINT
AT d,a+1;"[graphic]": BEEP .02,x: POKE
attr,104: LET l=USR scr: PRINT A
T d,a+1;"   ": NEXT x
3030 POKE attr,71: LET l=USR scr
: LET lives=lives-1
3040 GO SUB 6100: IF NOT lives T
HEN GO TO 4000
3050 LET fuel=150: GO TO 2110
3500 REM New Sector
3510 PRINT AT 8,0,,"        ENTERI
NG NEW SECTOR",,,"PREPARE FOR JU
MP TO LIGHT SPEED",,,
3520 FOR x=0 TO 60 STEP 5: BEEP
.01,x: NEXT x
3530 IF sk<.9 THEN LET sk=sk+.1
3540 GO SUB 7010
3550 FOR x=0 TO 7: POKE attr,x*8
+64+7-x: LET l=USR scr: BEEP .01
,x+20: POKE attr,8*(7-x)+64+x: L
ET l=USR scr: BEEP .01,20-x: NEX
```



ASTEROIDS

RUNS ON A SPECTRUM IN 48K

```
T x
3560 FOR x=1 TO 10: POKE attr,92
: LET l=USR scr: PAUSE 2: POKE a
ttr,73: LET l=USR scr: BEEP .02,
10: NEXT x
3570 PRINT PAPER 8; INK 8;AT 9,0
,,,,,,,: POKE attr,71: LET l=USR
scr
3580 LET fuel=fuel+50: LET sect=
1: RETURN
4000 REM Game Over
4010 PRINT AT 7,0,,"           G
AME  OVER",,,: PAUSE 50
4020 FOR x=0 TO 255 STEP 3: OUT
254,x: POKE attr,x: BEEP ,005,x/
4: LET l=USR scr: NEXT x
4030 POKE attr,71: LET l=USR scr
4040 FOR x=1 TO 100: NEXT x
4050 FOR x=1 TO 24: LET l=USR 35
82: PAUSE 1: NEXT x
4060 CLS
4070 IF sc<=s(lev) THEN FOR x=1
TO 100: NEXT x: GO TO 4200
4080 PRINT ''"     CONGRATULATIONS
!! YOU HAVE"''"  QUALIFIED FOR T
HE STASTEROIDS"''"    HALL OF FA
ME AT LEVEL 0";lev
4090 FOR x=1 TO 5: FOR y=10 TO 6
0 STEP 5: BEEP .01,y: NEXT y: NE
XT x: PRINT ''"  PLEASE ENTER YO
UR NAME BELOW"''"     (MAXIMUM OF
12 CHARACTERS)"
4100 INPUT LINE z$: IF z$="" OR
LEN z$>12 THEN BEEP .2,-20: BEEP
 .3,-30: GO TO 4100
4110 LET s$(lev)=z$: LET s(lev)=
sc
4200 CLS
4210 PRINT INK 6;"         H A L L
 OF   F A M E"' INK 5;"_______
________"
4220 PRINT ' INK 6;" LEVEL
  NAME           SCORE"' INK 5;"___
________"
4230 PRINT
4240 FOR x=1 TO 9: PRINT TAB 3;x
;TAB 10;s$(x);TAB 27;s(x): NEXT
x
4250 PRINT INK 5;"_____________
_______"
4260 PRINT '' INK 6;"   PRESS ENT
ER FOR ANOTHER GAME"
4270 LET i$=INKEY$: IF i$="" THE
N BEEP .1,-PEEK 23672/5: GO TO 4
270
4275 IF i$<>CHR$ 13 THEN GO TO 4
290
4280 FOR x=10 TO 20: BEEP .1,x:
NEXT x: GO SUB 4800
4285 IF i$="n" THEN GO TO 130
4286 LET fuel=150: LET sc=0: LET
 sect=1: LET lives=3: GO SUB 720
0: GO TO 150
4290 CLS
4310 PRINT AT 8,0;"      T H E
  E N D"
4320 POKE 65003,0: POKE 65006,24
: FOR x=0 TO 7: FOR y=0 TO 7: PO
KE attr,x+8*y: LET l=USR scr: BO
RDER y: BEEP .05,y+x: NEXT y: NE
XT x
4330 BORDER 0: POKE attr,71: LET
 l=USR scr: PAUSE 50: FOR x=1 TO
 11: LET l=USR 3582: PAUSE 1: NE
XT x
4340 INK 0: CLS : CIRCLE 130,
4345 FOR x=29 TO 32: CIRCLE 125,104,30
109,x: NEXT x: CIRCLE
4350 PRINT AT 6,12;"COMPUTER";AT
 8,13;"& VIDEO";AT 10,14;"GAMES"
4360 PLOT 93,101: DRAW 64,0: DRA
W 13,13: DRAW -64,0: DRAW -13,-1
3
4380 FOR x=1 TO 7: POKE attr,x:
LET l=USR scr: PAUSE 4: NEXT x:
GO TO 4380
4800 PRINT '"WOULD YOU LIKE THE
SAME SECTOR?"
4810 LET i$=INKEY$: IF i$<>"y" A
ND i$<>"n" THEN GO TO 4810
4820 RETURN
5000 REM Play Intro Tune (?)
```

```
5010 FOR x=0 TO 10: BEEP .06,x:
BEEP .06,x+1: BEEP .05,10-x: NEX
T x
5020 BEEP .2,0
5030 FOR x=1 TO 100: NEXT x
5900 RETURN

6000 REM [illegible]

6010 POKE 23693,71: BORDER 0: CL
S
6020 PRINT AT 0,0;"SCORE:0000 FU
EL:000 SUBSECTOR:00";AT 0,10-LEN
 STR$ sc;sc;AT 0,19-LEN STR$ fue
l;fuel;AT 0,32-LEN STR$ sect;sec
t: OVER 1: PRINT INK 6;AT 0,0;"
     ";AT 0,11;"        ";AT 0,20;"
           ": OVER 0
6030 PRINT AT 1,0; INK 7;: FOR x
=1 TO 21: PRINT a$(sect,x): NEXT
 x
6040 LET p=INT (RND*19)+2: PRINT
 AT p-1,29;"   ";AT p,29; INK IN
T (RND*3)+3;" D";AT p+1,29;"
";AT 11,0;b$(1,4 TO )
6100 INPUT "": PRINT #0;" SHIPS:
 ";: FOR x=1 TO lives: PRINT #0;
 INK INT (RND*3)+4;"AB ";: NEXT
x
6900 RETURN

7000 REM [illegible]

7005 LET sc=0: LET lives=3: LET
fuel=150: LET sect=1
7010 DIM a$(10,21,32): LET na=sk
*90: LET inc=1
7020 FOR x=1 TO 10
7030 FOR y=1 TO na
7040 LET d=INT (RND*21)+1: LET a
=INT (RND*32)+1: IF a$(x,d,a)<>"
" THEN GO TO 7040
7050 LET a$(x,d,a)="E"
7060 NEXT y
7070 IF x=6 THEN LET inc=-inc
7075 LET na=na+inc*INT (RND*(sk+
.6)*19+5)
7080 IF na<=0 THEN LET na=10
7090 FOR z=10 TO 12: LET a$(x,z,
 TO 5)="     ": NEXT z
7100 NEXT x
7200 LET d=11: LET a=0: LET od=d
: LET oa=a
7210 LET r=0
7900 RETURN

8000 REM [illegible]

8010 POKE 23693,58: BORDER 7: CL
S
8020 PRINT AT 7,0;"   SELEC
T A LEVEL"
8030 PRINT ''"   (1 - EASIEST, 9
 - HARDEST)"
8040 POKE attr,56+INT (RND*5): L
ET l=USR scr: LET i$=INKEY$: IF
i$<"1" OR i$>"9" THEN BEEP .01,R
ND*20: GO TO 8040
8050 LET sk=VAL i$/10
8200 POKE 23693,23: BORDER 0: CL
S
8220 PRINT AT 6,0; PAPER 0;" P
LEASE WAIT..."
8230 LET lev=VAL i$
8900 RETURN

9000 REM [illegible]

9010 POKE 23693,71: BORDER 0: CL
S
9020 POKE 23658,0: RANDOMIZE : R
ESTORE
9030 FOR x=USR "a" TO USR "g"+7
9040  READ a: POKE x,a
9050 NEXT x
9060 FOR x=1 TO 18
9070  READ a: POKE x+64999,a
9080 NEXT x
9090 LET a$="STASTER
ROIDSSTASTER
ROIDS"
9100 LET scr=65000: LET attr=scr
+1
9110 FOR x=7 TO 0 STEP -1
9120  POKE attr,x*8+x+64
9130  LET l=USR scr: BORDER x: B
EEP .3,-x-20
9140 NEXT x
9150 FOR x=1 TO 50: PLOT RND*255
,0: IF x=38 THEN PRINT AT 21,0;a
$( TO 32)
9160 IF x=39 THEN PRINT AT 21,0;
a$(33 TO 64)
9170 IF x=40 THEN PRINT AT 21,0;
a$(65 TO )
9180 LET l=USR 3582: NEXT x
9220 LET z=5: LET n=-20: LET a=.
1: FOR p=1 TO 7: FOR x=1 TO z
9230  POKE attr,p*8+64: LET l=US
R scr: BEEP a,n
9240  POKE attr,71: LET l=USR sc
r: BEEP a,n-5
9250 LET n=n+.5: NEXT x: LET z=z
+3: LET a=a-.01: NEXT p
9260 PRINT AT 12,0;" Copyright
1983  M. J. Levers": FOR n=40 TO
 0 STEP -1: BEEP .01,n: NEXT n
9270 PAUSE 100: INK 7: PAPER 0:
POKE 23692,-1: PRINT AT 21,0;
9280 PRINT PAPER 2;" STASTEROIDS
 © 1983 M.J. LEVERS "
9290 PRINT '" The idea of this g
ame is to     pilot a space craft
 through a   sector of galaxy. T
his may soundsimple but each sec
tor is divi- ded into ten sub-se
ctors. Each   of these sub-sector
s are filled with STASTERDIDS (S
Tationary     ASTEROIDS). At the
end of each   sub-sector is a ref
uelling stat-ion which you must
try to dock   with to replenish y
our fuel. You"
9300 PRINT "start with 150 units
 of fuel. Ifit runs out or you c
rash three   ships the game ends.
 Your score is the distance you
manage to    travel."
9305 PRINT " If you reach the en
d of a        sector another is ge
nerated."
9310 PRINT '"KEYS: 1 - UP,  Z -
down"
9320 PRINT #0; PAPER 1;" PLEASE
PRESS ENTER TO CONTINUE "
9330 DIM s$(9,12): DIM s(9): FOR
 x=1 TO 9: LET s$(x)="ZX Spectru
m": NEXT x
9340 POKE 65003,32: POKE 65006,2
1
9350 DIM b$(2,7): LET b$(1)=CHR$
 16+CHR$ 3+"F"+CHR$ 16+CHR$ 6+"A
B": LET b$(2)=CHR$ 16+CHR$ 4+"G"
+b$(1,4 TO )
9360 IF INKEY$<>CHR$ 13 THEN GO
TO 9360
9400 RETURN

9500 REM [illegible]

9510 DATA 135,223,50,254,50,223,
135,0
9520 DATA 192,112,204,255,204,11
2,192,0
9530 DATA 68,16,130,40,128,18,12
8,36
9540 DATA 29,21,119,215,119,21,2
9,0
9550 DATA 36,90,129,130,65,129,1
06,20
9560 DATA 0,6,24,98,24,6,0,a
9570 DATA 0,a,6,24,6,0,a,a

9600 REM [illegible]

9610 DATA 62,0,17,0,88,6,24,197,
6,32,18,19,16,252,193,16,246,201

9900 REM The following user
         graphics are used:-

 A = ☒   B = ▶   C = ░   D = ▦

 E = ○   F = <   G = ‹

9998 REM  CAUTION

9999 REM  SOME PEOPLE MAY FIND
          THE STROBE EFFECT IN
           THE INTRODUCTION
              DISTURBING
```

```
1 REM DRAGON RUN.....BY PETER AND MARK WRIGHT......JUNE 1982
3 GOSUB 2000
5 DIM N$(50),S$(50),A$(1),Z$(1):POKE 752,1
7 GRAPHICS 0:SETCOLOR 2,14,4:SETCOLOR 4,1,2:N$="SIR "
10 ? "THE SPORT OF DRAGON RUNNING.":? :? "ragon running was an ancient sport"
12 ? " in medievel England.":? :?"The Dragon Runner was taken through"
14 ? "the dragon's forest unarmed. By using":? "skill and cunning alone he had t
o"
16 ? "return to the castle.":? :? "If he succeeded, the Castle Baron":? "would r
eward him with a purse of 100"
18 ? "gold pieces, if he failed......":? :? "The sport died out as one by one th
e"
20 ? "wandering runners were eaten.":? :? "See how many runs you can make ere "
22 ? "you become a dragon's dinner.":? :? "If you wish to play, please enter":?
"your name and press RETURN"
30 INPUT S$:N$(LEN(N$)+1)=S$
36 GRAPHICS 0:SETCOLOR 2,14,4:SETCOLOR 4,1,2
40 ? :? N$:? :? "YOU ARE NOW A FULLY FLEDGED DRAGON":? "RUNNER IN PERSONA (D.R.I
.P.)"
45 ? :? "YOU ARE CHARGED THAT USING ONLY THE"
50 ? "ATARI JOYSTICK (in the left hand":? "socket) YOU WILL AVOID THE GREEN"
55 ? "DRAGON.":? :? "IF YOU REACH THE CASTLE GATE SAFELY":? "YOUR FORTUNE WILL B
E INCREASED BY"
60 ? "100 GOLD PIECES AND YOU WILL OFFERED":? "A FURTHER RUN.":? :? "WHEN YOU HA
VE 1000 GOLD PIECES LIFE"
65 ? "WILL BECOME MORE DIFFICULT!!!!":? :? "PRESS RETURN WHEN YOU ARE READY FOR
"
70 ? "YOUR CHALLENGE.GOOD LUCK!!!!!!!":INPUT A$
90 GP=0
100 GRAPHICS 5:SETCOLOR 0,12,6:SETCOLOR 1,3,4:SETCOLOR 2,0,8:SETCOLOR 4,12,2:POK
E 752,1
105 COLOR 3
110 I=15:PLOT I,0:PLOT I+2,0:PLOT I+6,0:PLOT I+8,0:PLOT I,1:DRAWTO I+2,1:PLOT I+
6,1:DRAWTO I+8,1:PLOT I+4,1
120 PLOT I,2:DRAWTO I+8,2:FOR N=3 TO 4:PLOT I,N:DRAWTO I+2,N:PLOT I+6,N:DRAWTO I
+8,N:NEXT N
130 FOR I=1 TO 25:X=INT(76*RND(1)+2):Y=INT(35*RND(1)+3):COLOR 1
140 PLOT X,Y:DRAWTO X+2,Y:PLOT X+1,Y-1:COLOR 2:PLOT X+1,Y+1:NEXT I
145 COLOR 0:I=18:FOR N=3 TO 5:PLOT I,N:DRAWTO I+2,N:NEXT N
149 ? "THE DRAGON HAS SEEN YOU":? "RUN FOR YOUR LIFE!"
150 GOSUB 1500
155 ? "YOUR FORTUNE IS ";GP;" GOLD PIECES":? :?
160 M=X:E=39:D=Y:R=INT(7*RND(1)+30):D1=X:R1=3
170 COLOR 3:PLOT M,E:SOUND 0,0,0,0:IF (M=19) AND (E=4) THEN 1000
180 Z=STICK(0):IF Z=15 THEN 180
181 SOUND 0,0,5,15
182 IF Z=7 THEN 190
183 IF Z=11 THEN 220
184 IF Z=13 THEN 250
185 IF Z=14 THEN 280
186 IF Z=10 THEN 280
187 IF Z=6 THEN 280
188 IF Z=9 THEN 250
189 IF Z=5 THEN 250
190 LOCATE M+1,E,XX:IF XX<>0 THEN 300
200 COLOR 0:PLOT M,E:M=M+1:IF M>78 THEN M=78
205 GOSUB 500
210 GOTO 170
220 LOCATE M-1,E,XX:IF XX<>0 THEN 300
230 COLOR 0:PLOT M,E:M=M-1:IF M<1 THEN M=1
235 GOSUB 500
240 GOTO 170
250 LOCATE M,E+1,XX:IF XX<>0 THEN 300
260 COLOR 0:PLOT M,E:E=E+1:IF E>39 THEN E=39
265 GOSUB 500
267 IF Z=9 THEN 220
268 IF Z=5 THEN 190
270 GOTO 170
280 LOCATE M,E-1,XX:IF XX<>0 THEN 300
290 COLOR 0:PLOT M,E:E=E-1:IF E<1 THEN E=1
293 GOSUB 500
294 IF Z=10 THEN 220
296 IF Z=6 THEN 190
298 GOTO 170
```

VARIABLES

N$ and S$: These strings are concatenated to form players name and give him a title.
Z$: Replay response (Y or N).
G.P.: Gold pieces.
M,E: Players position.
D,R: Dragon's position.
D1,R1: Second dragons position.
A,B: Dragon movement amendment to D,R.
F,C: Second dragon movement amendment to D1,R1.

Program notes
Line 181: The odd number in the distortion position (SOUND 0,0,5,15) gives a click when the sound is turned on, and a click when turned off. This is used for footsteps.
Line 500: Makes A and B either 1 or −1. These values are used later to modify the dragon's position.
Line 520: Looks to see if there is a tree in the way. If there isn't D and R are modified in line 530. If there is the dragon stays put.
Line 1250: POP is the command to clear the return address as the program has jumped from a subroutine to this line.

The authors say that it should not be too difficult to adapt the program to a one or two player format. One using a joystick to control the dragon — the other controlling the man.

Beware the fire breathing dragon my dears. He'll singe your eyebrows with just a single glance! He's a ravenous beast and will gobble you down as soon as look at you if you let him get near enough.

Once there was a great and brave dragon hunter in these parts who tracked down dragons for gold. Even he couldn't defeat this scaled serpent. He's never given up and keeps on trying to beat the dragon. But the monster keeps chasing him back to the castle.

The object of this game is to get from the bottom of the screen to the castle at the top using the joystick controller. You are chased by a computer controlled dragon — and if you manage to escape his fiery breath and reach the castle you earn 100 gold coins by way of reward.

The secret of the game lies in the glades and copses of the Dark Forest which bars your way to the castle. Neither you or the dragon can pass through the forest — but if you are tricky enough you can trap the dragon within the trees and race to the castle before it escapes.

If you manage to complete 10 runs and collect 1,000 gold coins the dragon calls up its mate and you have to deal with two deadly monsters.

You are represented on screen by a white square, the dragon by a green square. The dragon does not appear until you start moving. To slam the castle door you must be positioned exactly in the centre of the castle gateway. And remember you are not safe until that door is shut.

RUNS ON AN ATARI 400/800 IN 8K

BY PETER AND MARK WRIGHT

DRAGON RUN



```
300 COLOR 0:PLOT M,E:GOTO 170
500 A=(D<=M)-(D>=M):B=(R<=E)-(R>=E)
510 COLOR 0:PLOT D,R:IF GP>=1000 THEN GOSUB 750
520 LOCATE D+A,R+B,YY:IF (YY=1) OR (YY=2) THEN 540
530 D=D+A:R=R+B
540 COLOR 1:PLOT D,R:IF (D=M) AND (R=E) THEN 1250
550 RETURN
750 COLOR 0:PLOT D1,R1:C=(D1<=M)-(D1>=M):F=(R1<=E)-(R1>=E)
760 LOCATE D1+C,R1+F,ZZ:IF (ZZ=1) OR (ZZ=2) THEN 780
770 D1=D1+C:R1=R1+F
780 COLOR 1:PLOT D1,R1:IF (D1=M) AND (R1=E) THEN 1250
790 RETURN
1000 FOR I=3 TO 4:COLOR 2:PLOT 18,I:DRAWTO 20,I:NEXT I
1005 FOR I=1 TO 5:SOUND 0,255,2,15:NEXT I
1006 FOR I=15 TO 0 STEP -1:SOUND 0,255,2,I:NEXT I:SOUND 0,0,0,0
1010 GP=GP+100:POKE 656,0:? "YOUR FORTUNE IS ";GP;" GOLD PIECES'
1020 FOR I=1 TO 500:NEXT I:GOTO 100
1250 POP
1255 GOSUB 1500
1260 ? "SORRY ";N$;",":? "YOU'VE JUST BECOME A SQUARE MEAL.
":? "BUT YOU HAD ";G
P;" GOLD PIECES."
1270 ? "ANOTHER GAME (Y or N)";
1274 CLOSE #1
1275 OPEN #1,4,0,"K:":GET #1,A
1276 IF A=89 THEN 90
1290 ? :? :? "THANKS FOR THE GAME ";N$
1300 GOTO 1300
```

```
1500 FOR I=0 TO 15 STEP 1.5:SOUND 0,243,8,I:SOUND 2,INT(15*RND(1)+240),12,I
1510 NEXT I:FOR Z=1 TO 100:NEXT Z:FOR I=15 TO 0 STEP -0.2:SOUND 0,243,8,I:SOUND
2,INT(15*RND(1)+240),12,I:NEXT I
1520 RETURN
2000 GRAPHICS 2+16:SETCOLOR 0,0,15:SETCOLOR 4,15,0
2010 POSITION 5,3:? #6;"D R A G O N":POSITION 5,4:? #6;"-----------":POSITION 8,
7:? #6;"R U N":POSITION 8,8:? #6;"-----"
2020 SOUND 1,243,10,1
2050 FOR I=1 TO 4:READ H,K:SETCOLOR 4,15,K:SOUND 0,H,10,15:FOR N=15 TO 0 STEP -0
.2:SOUND 0,H,10,N
2055 NEXT N:NEXT I:SOUND 1,0,0,0
2060 DATA 162,0,162,2,162,4,193,2
2100 RETURN
```

Illustration: Dorian Cross

At last. A range of software that's as well designed as the Dragon 32.

Six months ago, most computer users thought a Dragon was something out of an adventure game.

How times change. Nowadays, it's almost impossible to pick up a computer magazine without reading some new tribute to the Dragon 32.

THE FIRST FAMILY COMPUTER

We called it the first family computer. And we believe that much of its success derives from the fact that it has been superbly designed for the job it has to do.

Design that incorporates 32K RAM of memory at a real value-for-money price level.

Design that utilises the advanced 6809E microprocessor.

Plus a range of features that help make the world of computers accessible to first-time users. Like colour drawings. 5 octaves of music.

And plenty of power and versatility to keep up the interest as your experience increases.

SOFTWARE TO MATCH

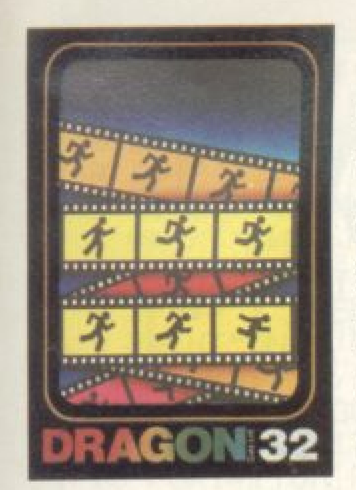
Designing a range of software that does justice to the Dragon was a task we approached with as much care as designing the computer itself.

The results are now available - games, educational programs, hints on programming - conceived by some of the best software houses in the world, to help users get even more out of their machines.





*TV not included in price.



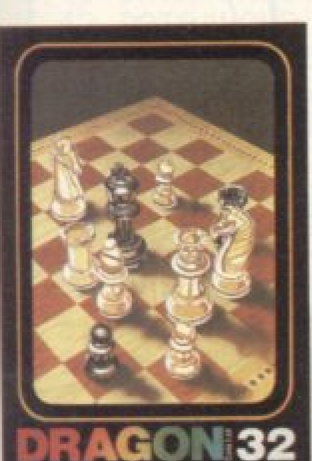
Graphic Animator. A cassette that makes use of the Dragon's ability to draw on the screen. It shows you how to create simple cartoons - then bring them to life.



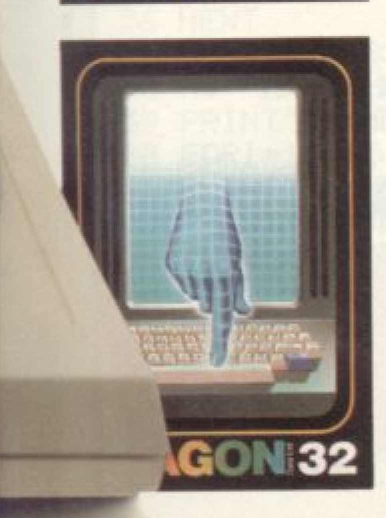
Personal Finance. This cassette allows you to keep track of all the family's finances, from bills to bank statements.



Ghost Attack. On cartridge. You're in a maze, and you must find your way out. But you're not alone - you're pursued by ghosts!



Chess. A great partner to play against again and again - with one major drawback. It's very hard to beat. Test yourself against nine different levels. On cartridge.



Typing Tutor. Only a keyboard as sophisticated as the Dragon's could allow you a program like this. You use the Dragon's own keyboard to learn to type. On cassette.



Cave Hunter. Finding the hidden gold is hard. But surviving the attacks of malevolent creatures may well prove to be impossible. Cave Hunter is on cartridge.



Dragon Selection. A cassette of utility programs, allowing you to create your own database. Write your own tunes - or learn other language vocabularies.



Starship Chameleon. A cartridge game. You find yourself under attack by the dreaded Gabolators! Their task is to take your planet - yours is to protect it.



Computavoice. This cassette actually enables your Dragon to speak to you.

These are just some of our titles, and every month, we'll be adding more and more.

What you get out of a computer depends on what you put in. And with a Dragon 32 and Dragon software, there's enough challenge and satisfaction for anyone. But then, that's what it's designed for.

DRAGON 32

The first family computer.



ELECTION

BY M. J. COATES

RUNS ON A 40 COLUMN PET IN 8K

So you think you could be a great Member of Parliament, solving all the problems of the country overnight. Well, try and convince the voters!

This game is played on a board drawn by your computer and can be played by up to five people. The object is to collect as many votes as possible from your constituency. To win you must enter the House of Commons with more than 25,000 votes.

You have to face all the ups and downs of political life and be well prepared for a general election when it is called. There are upsets around every corner — but you could also be surprised by a bit of good fortune which sends your popularity soaring.

So look out your best suit and switch on that winning smile. Who knows, you could become the next Prime Minister!

Illustration: Dorian Cross

```
1 DIMA(22),S$(22),Q(22),M1(22)
2 FORI=1TO22:READA:A(I)=A+32768:NEXT
3 DATA41,46,51,56,61,66,71,76,276,476,676,876,871,866,861,856,851,846,841,641
4 DATA441,241,X,MAGGIE,CYRIL,TONY,RODNEY,LAB,CON,LIB,SDP,IND
5 M$(0)="":GOSUB65
6 PRINT"DO YOU WANT INSTRUCTIONS ";
7 GETA$:IFA$=""THEN7
8 IFA$="Y"THENPRINT"YES":GOSUB152:GOSUB137:GOTO10
9 PRINT"NO":GOSUB152
10 POKE59468,12:FORI=1TO5:READN$(I):NEXT
11 PRINT"":GOSUB65:INPUT"HOW MANY NOMINATIONS (1-5) ";N
12 IFN>5ORN<1THEN11
13 FORI=1TON:PRINT"CANDIDATE";I;:INPUT"YOUR NAME ";N$(I):NEXT
14 FORI=1TO5:N(I)=ASC(LEFT$(N$(I),1))+64:NEXT:GOSUB51
15 FORI=1TO5:M$(I)=M$(I-1)+"":M(I)=1500:V(I)=0:READP$(I):NEXT:M$(0)=""
16 M$="":M1$=M$+M$+"":M2$=M1$+M$:M$=M$+""
17 GOSUB149:C$=M$(5)+""
18 D$(0)="                ":D$(1)="                "
19 D$(2)="                ":D$(3)="                "
20 D$(4)="                ":D$(5)="                "
21 D$(6)="                "
22 FORI=0TO6:D$(I)=C$+D$(I):NEXT
23 FORI=1TO22:READS$(I),Q(I),M1(I):NEXT
24 DATADOUBLE PAY,88,0
25 DATAGAIN 1000 VOTES,1000,0
26 DATABAD PUBLICITY..LOSE 500 VOTES,-500,0
27 DATAELECTION,5,0
28 DATA"PRESENT A PLAN TO CREATE JOBSFOR UNEMPLOYED.GAIN 5000 VOTES
"
29 DATA5000,0
30 DATA"SLAGGED IN NEWSPAPERSLOSE 800 VOTES",-800,0
31 DATA"VISIT CONSTITUENTSGAIN 1000 VOTES",1000,0
32 DATABUY NEW SUIT...COST $320,0,-320
33 DATAEMPLOY P.R FIRM,66,0
34 DATAELECTION,5,0
35 DATAPRESENT BUDGET.LOSE 2000 VOTES,-2000,0
36 DATAHOUSE OF COMMONS,99,0
37 DATAUNION PAYS YOU $1000,0,1000
38 DATA"PARTY SPLIT ON POLICYLOSE 1/2 OF YOUR VOTES",9,0
39 DATA"APPEAR ON T.V TALK-INGAIN 5000 VOTES",5000,0
40 DATAELECTION,5,0
41 DATA"SHOUTED DOWN IN HOUSELOSE 1000 VOTES",-1000,0
42 DATA"YOUR P.R FIRM IS DOING WELLGAIN 2000 VOTES",2000,0
43 DATALOSE 500 VOTES,-500,0
44 DATASALARY INCREASE 20%,77,0
45 DATAELECTION,5,0
46 DATA"LOSE LAWSUIT...COSTS $500AND LOSE 500 VOTES",-500,-500
47 FORI=1TO5:S(I)=2000:READD(I):P(I)=1:POKEA(1)+D(I),N(I):NEXT
48 DATA0,2,41,80,82
49 GOTO68
50 FORI=0TO4:FORK=0TO29:POKE33373+I*40+K,32:NEXTK,I:RETURN
51 PRINT"";:FORQ=1TO5:PRINT"";
52 A$="":FORI=1TO24:PRINTA$;:NEXT
53 FORI=1TO3:PRINTB$;:NEXT
54 FORI=1TO8:PRINT"";
55 IFQ=5ANDI=7THENPRINT"":I=8
56 NEXT
57 NEXT:POKE33767,254
58 A$="                              "
59 PRINT"";
60 FORI=1TO15:PRINTA$;:NEXT
61 PRINT" NAME   PARTY   MONEY   VOTES ";
62 PRINT"                              "
63 PRINT"                              "
64 RETURN
65 PRINT"                                  ";
66 PRINT"          ELECTION CAMPAIGN       ";
67 PRINT"                                  ":RETURN
68 FORP=1TO5
69 GOSUB132:IFP>NTHENGOTO90
```



LEAP INTO THE COMPUTERISED AGE

VISIT OUR BRANCHES AT ROCHFORD AND HORNCHURCH AND SEE THE LARGEST SELECTION OF HOME COMPUTER SOFTWARE AND HARDWARE IN SOUTH ESSEX

JOIN OUR SOFTWARE CLUB and save £s. Lifetime membership £20. Your membership fee includes your choice of software to value of £18. You will receive order by return with membership card and your own personal club no. PLUS **10%** reduction on ALL future orders. We pay all postage and handling costs. For instant membership you may telephone your Access/Barclay/VISA card no.

Agents for Atari, Vic, Dragon, Rabbit, Romik, Bug Byte, Sharp, Texas, Kuma, Nascom, Micro Power, etc.



THE AMAZING ATARI COMPUTERS

NEW LOW PRICES

ATARI 400 16K £195.50

ATARI 400 48K + BASIC + MANUALS £319.00

ATARI 800 48K + BASIC + MANUALS £495.95

ATARI 800 16K + BASIC + MANUALS £395.95

Learn Programming

Invitation to Programming 1	£15.95
Invitation to Programming 2	£22.95
Invitation to Programming 3	£22.95
Basics of Animation	£11.95
Player Missile Graphics	£18.95
Display Lists	£11.95
Horiz/Vert Scrolling	£11.95
Page Flipping	£11.95
Sounds & Music	£11.95
Tricky Tutorials	£59.95

Business Programs

Atari Word Processor	£99.95
Mini Word Processor	£11.95
Graph-It	£13.95

Statistics	£13.95
Mortgage & Loan Analysis	£13.95
Bob's Business	£9.95

Utilities

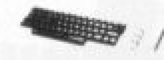
Programming Ads Package 1	£9.95
6502 Disassembler	£9.95
3D Supergraphics	£29.95
Telelink	£21.50

Adventure Games

Galactic Empire	£14.95
Rescue at Rigel	£22.45
Datestones of Ryn	£14.95
Star Warrior	£28.95
Invasion Orion	£18.95
Star Trek 3.5	£14.95
Crush, Crumble & Chomp	£22.45
Temple of Apshai (Part 1)	£28.95
Upper Reaches of Apshai (Part 2)	£14.95
Curse of Ra (Part 3)	£14.95
Adventure Land	£14.95
Pirates Adventure	£14.95
Mission Impossible	£14.95
Voodoo Castle	£14.95
The Count	£14.95
Strange Odyssey	£14.95
Mystery Fun House	£14.95
Pyramid of Doom	£14.95
Ghost Town	£14.95
Savage Island I	£14.95
Savage Island II	£14.95
Golden Voyage	£14.95
The Battle of Shiloh	£29.95
Energy Czar	£9.95
Kingdom	£9.95

Plus! Arcade Games, Home Game Programs, Music Programs, etc. etc.

VIC 20 £139.95



Hardware

VIC 20 Console	£169.99
C2N Cassette Unit	£44.95
VIC Printer	£230.00
VIC Disk Drive	£396.00
3K RAM Cartridge	£29.95
8K RAM Cartridge	£44.95
16K RAM Cartridge	£74.95

Joysticks and Paddles

Single Joystick	£7.50
Pair of Joysticks	£13.95
Le Stick	£24.95
Pair of Paddles	£13.95

Programming Aid Cartridge

Super Expander 3K RAM and Hi res graphics	£34.95
Programming Aid Additional commands, function Key programming etc.	£34.95
Machine Code Monitor	£34.95

Software (all 3K unless stated)
Introduction to BASIC Cassettes

Part 1	£14.95
Part 2	£14.95

Game Programs

Avenger Cartridge	£19.95
Star Battle Cartridge	£19.95
Super Slot Cartridge	£19.95
Jelly Monsters Cartridge	£19.95
Alien Cartridge	£19.95
Super Lander Cartridge	£19.95
Road Race Cartridge	£19.95
Rat Race Cartridge	£19.95
Blitz Cassette	£4.99
Mole Attack Cartridge	£24.95
Adventureland Cartridge	£24.95
Pirate Cove Cartridge	£24.95
Mission Impossible Cartridge	£24.95
Voodoo Castle Cartridge	£24.95
The Count Cartridge	£24.95
Sargon 2 Chess Cartridge	£24.95
Gorf Cartridge	£24.95
Omega Race Cartridge	£24.95
Another VIC in The Wall Cassette	£7.00
VIC Panic Cassette	£7.00
Cosmiads Cassette	£7.00
Backgammon Cassette (+3K)	£7.00
VIC Men Cassette	£7.00
VIC Asteroids Cassette	£7.00

Business Programs

Simplicalc Disk (+16K)	£24.95
Simplicalc Cassette (+16K)	£19.95
VIC Stock Control Cassette (+8K)	£19.95
VIC File Disk (+16K)	£24.95
VIC Writer Disk (+8K)	£24.95
VIC Writer Cassette (+8K)	£19.95

Education (CSE & GCE O Level Revision)
All cassette based and require at least 8K expansion memory

English Language	£9.99
Mathematics 1	£9.99
Mathematics 2	£9.99
Biology	£9.99
Chemistry	£9.99
Physics	£9.99
Computer Studies	£9.99
Geography	£9.99
History	£9.99
Arithmetic for 9 to 11 year olds	£9.99
Reading for 9 to 11 year olds	£9.99
General Knowledge for 9 to 11 year olds	£9.99
Spelling for 9 to 11 year olds	£9.99

Home Programs
All cassette based and require at least 8K expansion memory

Quizmaster	£9.99
Know Your Own IQ	£9.99
Junior IQ	£9.99
Know Your Own Personality	£9.99
The Robert Carrier Family Menu Planner	£9.99



SPECTRUM COMPUTER GROUP MEMBER

(MAIL ORDER)
174 HIGH STREET,
HORNCHURCH,
ESSEX, 04024 75613

17 GOLDEN CROSS PARADE,
(MANSTON GARDENS),
ASHINGDON ROAD,
ROCHFORD, 0702 540455

```
70 PRINTC$;N$(P);", YOUR GO";
C$;"■■PRESS SPACE"
71 GETA$:IFA$<>" "THEN71
72 GOSUB50:GOSUB126
73 Z=P(P)+D:IFZ>22THENZ=Z-22
74 GOSUB127
75 PRINTD$(0):PRINTC$;"■";S$(Z)
76 V=Q(Z)
77 IFV=9THENV(P)=INT(V(P)/2):V=0
78 IFV=99THENGOSUB91:V=0
79 IFV=5THENGOSUB99:V=0
80 IFV=66THENGOSUB114:V=0
81 IFV=77THENS(P)=INT(S(P)*1.2):V=0
82 IFV=88THENM(P)=M(P)+S(P):V=0
83 V(P)=V(P)+V:M(P)=M(P)+M1(Z)
84 IFV(P)<0THENV(P)=0
85 IFM(P)<0THENGOSUB154
86 GOSUB132
87 GOSUB149
88 GOSUB50
89 NEXTP:GOTO68
90 GOSUB153:GOTO72
91 IFV(P)<25000THENRETURN
92 PRINTC$;"■■YOU HAVE OVER 25000 VOTES"
93 GOSUB152:GOSUB152
94 PRINTC$;"■■THAT MEANS YOU ARE ELECTED"
95 GOSUB152:GOSUB152
96 PRINTC$;"■■                           "
97 PRINTC$;"■■WELL DONE ";N$(P)
98 PRINTC$;"■■■AND HARD LUCK THE REST":END
99 D$="SOUTHENDLEIGH   CANVEY  BENFLEETBASILDONPITSEA  GRAYS   OCKENDON"
100 GOSUB152
101 E$=MID$(D$,(INT(RND(1)*8)*8+1),8)
102 PRINT"■■BY ELECTION AT "E$
103 FORBE=1TO5:PRINT"■■■":FOREB=BETO1STEP-1:PRINT"■";
104 NEXT:PRINTN$(BE);TAB(10);P$(BE):NEXT
105 GOSUB153
106 FORBE=1TO5:PRINT"■■■":FOREB=BETO1STEP-1:PRINT"■";:NEXT
107 V2(BE)=INT(1000+RND(1)*500+RND(1)*500):PRINTTAB(15);V2(BE)
108 V(BE)=V(BE)+V2(BE):NEXT
109 PRINT"■■PRESS SPACE TO CONTINUE"
110 GETA$:IFA$<>" "THEN110
111 GOSUB51:GOSUB149
112 FORI=1TO5:POKEA(P(I))+D(I),N(I):NEXT
113 GOTO132
114 GOSUB152
115 IFP>NTHEN135
116 PRINTC$;"■ HOW MUCH DO YOU WISH TO PAY■■■■■■■■■■■■■■FOR THEIR SERVICE";
117 INPUTPA$:PA=VAL(PA$):IFPA=0THENRETURN
```

Illustration: Dorian Cross



Illustration: Dorian Cross

```
118 IFPA>M(P)THEN123
119 V2=0:V=INT(PA/10):FORV1=1TOV:V2=V2+INT(RND(1)*100+1):NEXT
120 GOSUB50
121 PRINTC$;"YOU GAIN";V2;"VOTES":V(P)=V(P)+V2:M(P)=M(P)-PA
122 GOTO152
123 GOSUB50:PRINTC$"YOU CAN ONLY AFFORD";M(P)
124 PRINTC$;"▒IF YOU DO NOT WANT A P.R FIRM▶▶▶▶▶▶▶▶▶▶▶▶THEN ANSWER 0"
125 GOTO114
126 FORK=1TO30:D=INT(RND(1)*6+1):PRINTD$(0):PRINTD$(D):NEXT:RETURN
127 IFZ<P(P)THENM(P)=M(P)+S(P):GOTO130
128 FORM=P(P)TOZ:POKEA(M)+D(P),N(P):G=M-1:IFM=1THENG=22
129 POKEA(G)+D(P),32:GOSUB153:NEXT:P(P)=Z:RETURN
130 FORM=P(P)TO22:POKEA(M)+D(P),N(P):POKEA(M-1)+D(P),32
131 GOSUB153:NEXT:P(P)=1:GOTO128
132 FORI=0TO29:X=PEEK(33053+P*40+I)
133 X=X+128+(X>127)*256
134 POKE33053+P*40+I,X:NEXT:RETURN
135 PA=INT(RND(1)*M(P)):PRINTC$;"▮ I WILL PAY $";PA
136 FORI=1TO500:NEXT:GOTO119
137 POKE59468,14
138 PRINT"♫"
139 PRINT"▒IHIS IS THE GAME OF ⁄˥˥¯⊣⌐Γ⁄⁄. IHE"
140 PRINT"OBJECT OF THE GAME IS TO COLLECT VOTES  FROM YOUR CONSTITUENCY.
141 PRINT"▒IO WIN , YOU MUST ENTER THE HOUSE OF    COMMONS WITH MORE THAN";
142 PRINT" 25000 VOTES.
143 PRINT"▒⌐F YOU LAND ON AN ⁄˥˥¯⊣⌐Γ⁄⁄ SQUARE THEN
144 PRINT"♫AN ELECTION WILL BE HELD.
145 PRINT"▒⁄P TO 5 PEOPLE CAN PLAY , WITH ME ACTINGAS ANY EXTRAS REQUIRED.
146 PRINT"▒▒";TAB(7);"▒˥˥¯♥♥ ♠⁄ | ⁄¯ | | Γ ⊤⁄|⌐⁄⁄¯▒"
147 GETA$:IFA$=""THEN147
148 PRINT"♫":RETURN
149 FORI=1TO5:PRINTM$(I);"                              "
150 PRINTM$(I);N$(I);M$(I);M$;P$(I);M$(I);M1$;M(I)
151 PRINTM$(I);M1$;"$";M$(I);M2$;V(I):NEXT:RETURN
152 FORI=1TO1E3:NEXT:RETURN
153 FORI=1TO500:NEXT:RETURN
154 GOSUB152:GOSUB50
155 PRINTC$"▮ BANKRUPT...BACK TO BEGINNING":M(P)=0:V(P)=0:POKEA(P(P))+D(P),32
156 P(P)=1:POKEA(1)+D(P),N(P):GOTO152
```

..direct to your door!

ALL TIME FAVOURITE

BUG-BYTE SOFTWARE

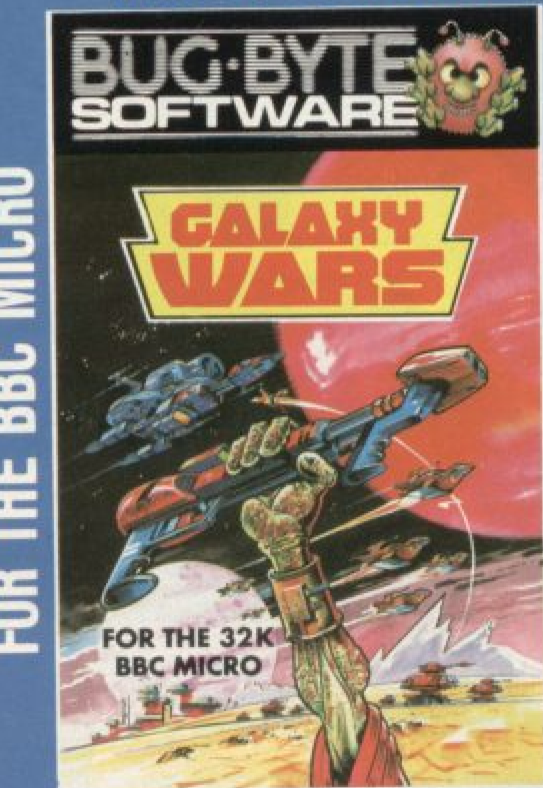
SPACE INVADERS

FOR THE 32K BBC MICRO

FOR THE BBC MICRO

PRICE £7.50

NEW PROGRAM



FOR THE BBC MICRO

PRICE £7.50

NEW PROGRAM

BUG-BYTE SOFTWARE

CITY DEFENCE

FOR THE 32K BBC MICRO

FOR THE BBC MICRO

PRICE £7.50

NEW PROGRAM



FOR THE BBC MICRO

PRICE £9.50

SOFTWARE EXPRESS

FREEPOST (No Stamp Required). Gores Road, Kirkby industrial Estate, Kirkby, Liverpool L33 7UA.

Software Express is a trading name of DAMS Office Equipment Liverpool.

THE SOFTWARE EXPRESS EASY-REPLY COUPON

Please mail me the following Software Cassettes.

(All prices include VAT and postage).

PROGRAM	PRICE	INSERT QUANTITY
SPECTRAL INVADERS	£5	
SPECTRES	£8	
ASPECT	£9	
THE CASTLE	£8	
SPACE INVADERS	£7.50	
GALAXY WARS	£7.50	
CITY DEFENCE	£7.50	
MUSIC SYNTHESIZER + AUTO COMPOSER	£9.50	
OTHER ITEMS		

TOTAL PRICE £

I enclose cheque/P.O. for

Or please charge my Credit Card No.

Access/ Barclaycard only please.

VISA

24 HOUR ANSAPHONE FOR CREDIT CARD ORDERS:

051-548 2020

Mail to:

SOFTWARE EXPRESS
FREEPOST
(No Stamp Required)
Gores Road,
Kirkby Industrial Estate,
Kirkby, Liverpool
L33 7UA.

CV

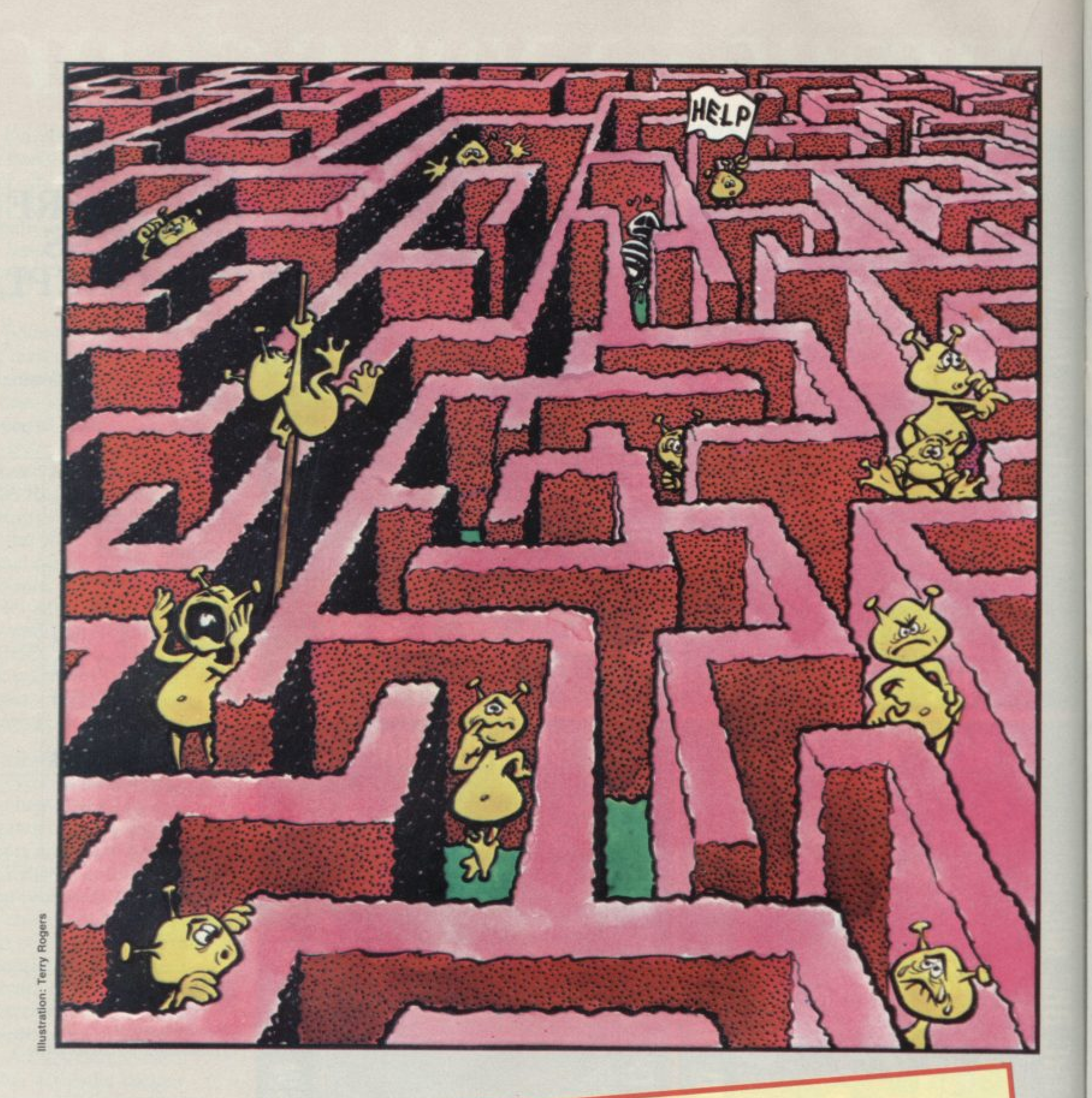


Illustration: Terry Rogers

PROGRAM NOTES

LINE NUMBER	DESCRIPTION
10-50	Set up variables and arrays.
60	Start of main program loop.
70	Input skill level.
80-190	Set up screen and start game.
200	Print out high score. N.B. LI.£ FE22 blanks current line. ?£ E0=21 sets cursor to 21st column in the line.
210	Set initial direction.
220	Start of game playing loop.
230-260	Scan keyboard.
270-330	Calculate new position.
340-390	Test new position and act accordingly.
400	Delay depending upon skill level.
410-440	End game and adjust high score.
450	End of main loop.
460	Question mark hunting subroutine.
470-560	Kill subroutine
570-630	instructions.
640-710	Assemble machine code sound generator.

```
10 X=#7F;Q=#BF
20 S=#8000;B=#B000;H=0;Z=#80
30 DIM C3,SS2,P-1
40 GOS.i
50 C?0=32;C?1=X;C?2=Q;C?3=#FF
60 DO P.$12
70 DO IN."SKILL LEVEL (1-5)"W;U.W>0 AND W<6
80 N=0;T=0;@=0;A=3
90 CLEAR0;MOVE 0,43;DRAW 63,43
100 ?#E1=0
110 F.J=64 TO 511
120 R=A.R.%4
130 N=N+(R=1 OR R=2)
140 S?J=C?R
150 N.J
160 P=272;S?P=171
170 P.$30"      Press"$128"any"$128"key"$128"to"$128"start"
180 LI.#FFE3
190 Y=10;F.J=100 TO 1 S.-1;?Z=J;LI.SS0;N.J
200 P.$30;LI.#FE22;?#E0=21;P."HIGH: ",H
210 F=1
220 DO D=0
230 ?B=2;IF B?1=254;D=32
240 ?B=3;IF B?1=254;D=-32
250 ?B=1;D=D-(B?1=251)
260 ?B=9;D=D+(B?1=247)
270 IF D=0;D=F
280 F=D
290 L=P;P=P+D
300 IF P%32=0 AND L%32=31;P=P-32
310 IF P%32=31 AND L%32=0;P=P+32
320 IF P<64;P=P+448
330 IF P>511;P=P-448
340 WAIT;V=S?P
350 IF V=Q;GOS.j
360 IF V=X;T=T+5+2*W;N=N-1;?Z=40;Y=40;LI.SS0
370 IF V=#FF;GOS.k
380 WAIT;S?L=32;WAIT;S?P=171
390 P.$30"SCORE: "T," LIVES: "A
400 F.J=1 TO 15-W*3;WAIT;N.
410 U.N=0 OR A=0
420 Y=10;F.J=1 TO 100;?Z=J;LI.SS0;N.J
430 ?B=0
440 IF T>H;H=T
450 LI.#FFE3;U.0
460jIF A.R.%5;T=T+10+4*W;N=N-1;?Z=30;Y=40;LI.SS0;R.
470kA=A-1
480 WAIT;S?L=32
490 ?Z=0;Y=150;LI.SS0
500 F.J=1 TO 4
510 WAIT;S?P=V
520 F.K=1 TO 150;N.K
530 WAIT;S?P=171
540 F.K=1 TO 150;N.K
550 N.J
560 F.J=1 TO 1500;N.J;R.
570iP.$12"              blockbuster"''
580 P.$#FF"....SINGLE SCORE"'
590 P.$#9F"....DOUBLE SCORE, 20% RISK"'
600 P.$#DF"....AVOID AT ALL COSTS!"''
610 P."CONTROLS:"''
620 P."CURSOR KEYS...UP & DOWN"'
630 P."        < & >...LEFT & RIGHT"''
640 SS0=-1;SS1=-1;SS2=-1
650 P.$21
660[
670:SS0 LDA B+2
680:SS1 LDX Z
690:SS2 DEX;NOP;NOP;BNE SS2;EOR @4; STA B+2;DEY;BNE SS1;RTS
700]
710 P.$6;LI.#FFE3;R.
```

RUNS ON AN ATOM IN 4K

BLOCKBUSTER

BY CHRIS CYTERA

Trapped within a vast maze built with solid blocks of some strange alien substance on a weird and wonderful planet, you must navigate your way to freedom or else be doomed to wander the labyrinth forever!

That's the challenge of Blockbuster, an original little diversion with some interesting twists — and turns!

In this fast moving game you control an inverted cross — that just can't keep still. So to keep up with the action you need a fast mind and dancing fingers!

You can smash the white blocks with a well aimed swipe, but avoid the grey blocks at all costs — contact with one of these will end one of your three lives. You can take a chance with the blocks branded with an inverted question mark — if you manage to smash one you'll get double points, but there's a calculated risk that it could wipe you out.

The bouncing cross can be controlled by using the cursor control keys for up-down movements and the inequality keys (<>) for right and left. Holding down a horizontal and vertical direction key at the same time enables you to move diagonally.

Your current score, lives remaining and the high-score are displayed at the top of the screen.

If your Atom has a colour card there is an additional bonus — the blocks come in different colours.

Chomp, munch, slurp . . . burp! Oh, excuse me! I can't stop long because I've got a dinner date with these two tasty looking ghosts I met down at the Programmers Arms last night.

They invited me up to their maze to see their dot collection. Why not, I thought . . .

This version of the arcade classic follows the regular theme. The happy eater munches his way around a maze — avoiding the hungry ghosts.

These ghosts are randomly guided and are not particularly energetic, tending to frequent one particular part of the maze. However, they are capable of a quick sprint down the corridors when you least expect it!

The best tactic is to munch your way around as close to the ghosts as possible at the start of each new maze, as the ghosts are as hungry for dots as you are.

You score one point for each dot consumed, and once you've cleared one maze a new one is provided. The ghosts start each new maze at a random position and you continue where you left off.

There are two skill levels and if you manage to munch your way through seven mazes at level one you automatically move up to level two. Control keys are the 'W', 'X', 'A' and 'O' keys.



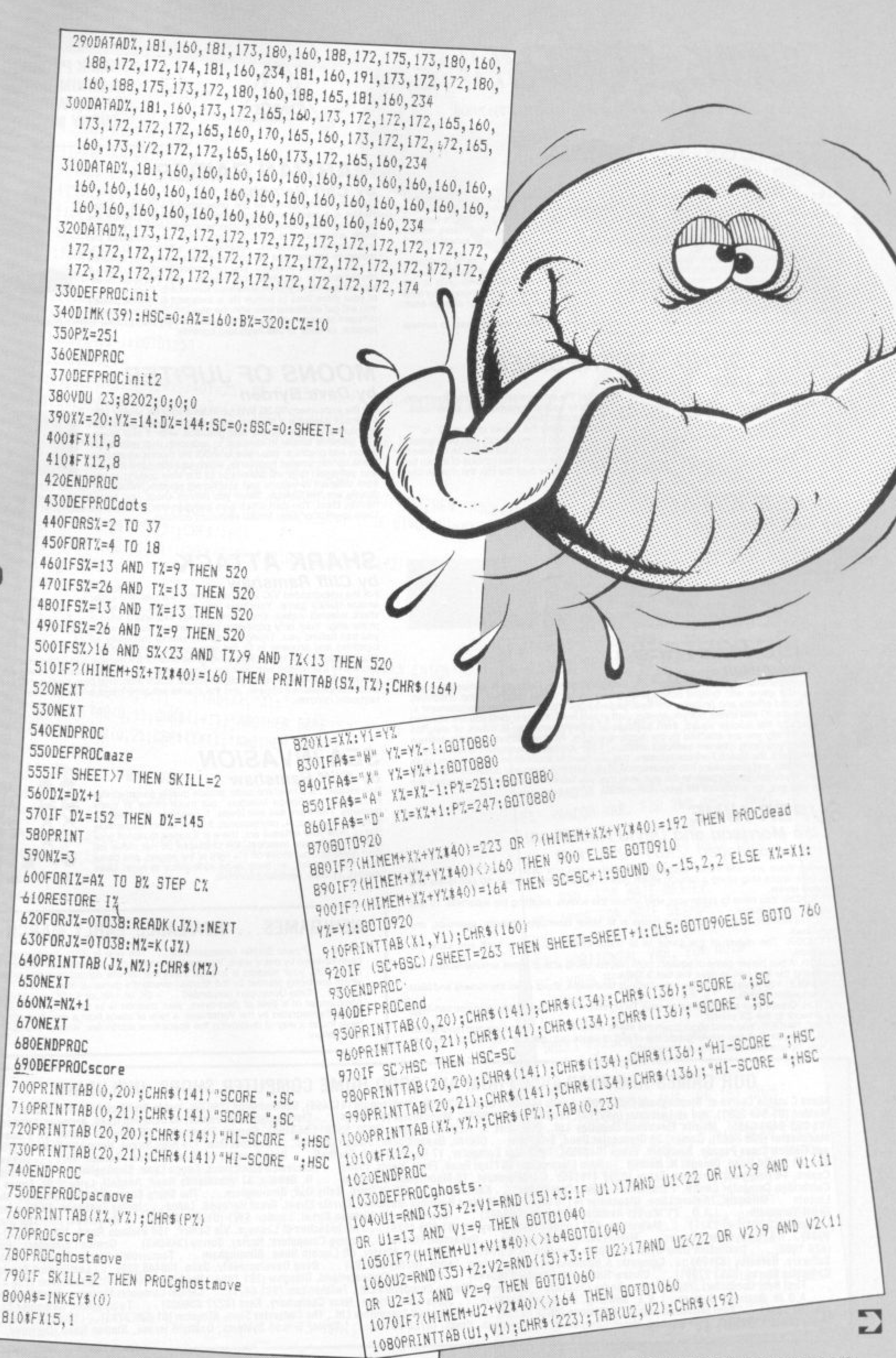
PACMAN

RUNS ON A BBC MODEL A IN 16K

BY MARK CLEWETT

```
10REM***PACMAN***
20REM***BY MARK CLEWETT***
30REM***11/10/82***
40MODE7
50PROCintro
60MODE 7
70PROCinit
80PROCinit2
90PROCmaze
100PROCdots
110PROCghosts
120PROCpacmove
130END
140REM*ONE DATA LINE = ONE TEXT LINE*
150REM*EACH NO. IS ONE VDU CHAR.*
160DATAD%,188,172,172,172,172,172,172,172,172,172,172,172,
  172,172,172,172,172,172,172,172,172,172,172,172,172,172,
  172,172,172,172,172,172,172,172,172,172,172,236
170DATAD%,181,160,160,160,160,160,160,160,160,160,160,160,
  160,160,160,160,160,160,160,160,160,160,160,160,160,160,
  160,160,160,160,160,160,160,160,160,160,160,234
180DATAD%,181,160,188,172,180,160,188,172,172,172,180,160,
  188,172,172,172,180,160,232,180,160,188,172,172,172,180,
  160,188,172,172,172,180,160,188,172,180,160,234
190DATAD%,181,160,181,188,165,160,173,172,252,188,165,160,
  173,172,172,236,181,160,234,181,160,253,188,172,172,165,
  160,173,252,188,172,165,160,173,180,181,160,234
200DATAD%,181,160,173,165,160,160,160,160,175,165,160,160,
  160,160,160,170,165,160,170,165,160,175,165,160,160,160,
  160,160,175,165,160,160,160,160,173,165,160,234
210DATAD%,181,160,160,160,160,180,160,160,160,160,160,188,
  172,180,160,160,160,160,160,160,160,160,160,160,188,172,
  180,160,160,160,160,160,180,160,160,160,160,234
220DATAD%,181,160,180,160,188,173,180,160,188,172,172,165,
  160,181,160,188,172,172,172,172,172,172,180,160,181,160,
  173,172,172,180,160,188,173,180,160,180,160,234
230DATAD%,181,160,165,160,173,172,165,160,173,172,172,172,
  172,165,160,181,160,160,160,160,160,160,181,160,173,172,
  172,172,172,165,160,173,172,165,160,165,160,234
240DATAD%,181,160,160,160,160,160,160,160,160,160,160,160,
  160,160,160,181,160,160,160,160,160,160,181,160,160,160,
  160,160,160,160,160,160,160,160,160,160,160,234
250DATAD%,181,160,160,160,188,172,180,160,188,172,172,172,
  172,180,160,181,160,160,160,160,160,160,181,160,188,172,
  172,172,172,180,160,188,172,180,160,160,160,234
260DATAD%,181,160,181,160,173,188,165,160,173,172,172,236,
  160,181,160,173,172,172,172,172,172,172,165,160,181,160,
  188,172,172,165,160,173,188,165,160,181,160,234
270DATAD%,181,160,160,160,160,165,160,160,160,160,160,170,
  172,165,160,160,160,160,160,160,160,160,160,160,173,172,
  165,160,160,160,160,160,165,160,160,160,160,234
280DATAD%,181,160,188,180,160,160,160,160,252,180,160,160,
  160,160,160,232,180,160,232,180,160,252,180,160,160,160,
  160.160,252,180,160,160,160,160,188,180,160,234
```

Illustrations: Terry Rogers



```
290DATAD%,181,160,181,173,180,160,188,172,175,173,180,160,
  188,172,172,174,181,160,234,181,160,191,173,172,172,180,
  160,188,175,173,172,180,160,188,165,181,160,234
300DATAD%,181,160,173,172,165,160,173,172,172,172,165,160,
  173,172,172,172,165,160,170,165,160,173,172,172,172,165,
  160,173,172,172,172,165,160,173,172,165,160,234
310DATAD%,181,160,160,160,160,160,160,160,160,160,160,160,
  160,160,160,160,160,160,160,160,160,160,160,160,160,160,
  160,160,160,160,160,160,160,160,160,160,160,234
320DATAD%,173,172,172,172,172,172,172,172,172,172,172,172,
  172,172,172,172,172,172,172,172,172,172,172,172,172,172,
  172,172,172,172,172,172,172,172,172,172,172,174
330DEFPROCinit
340DIMK(39):HSC=0:A%=160:B%=320:C%=10
350P%=251
360ENDPROC
370DEFPROCinit2
380VDU 23;8202;0;0;0
390X%=20:Y%=14:D%=144:SC=0:GSC=0:SHEET=1
400*FX11,8
410*FX12,8
420ENDPROC
430DEFPROCdots
440FORS%=2 TO 37
450FORT%=4 TO 18
460IFS%=13 AND T%=9 THEN 520
470IFS%=26 AND T%=13 THEN 520
480IFS%=13 AND T%=13 THEN 520
490IFS%=26 AND T%=9 THEN 520
500IFS%>16 AND S%<23 AND T%>9 AND T%<13 THEN 520
510IF?(HIMEM+S%+T%*40)=160 THEN PRINTTAB(S%,T%);CHR$(164)
520NEXT
530NEXT
540ENDPROC
550DEFPROCmaze
555IF SHEET>7 THEN SKILL=2
560D%=D%+1
570IF D%=152 THEN D%=145
580PRINT
590N%=3
600FORI%=A% TO B% STEP C%
610RESTORE I%
620FORJ%=0TO38:READK(J%):NEXT
630FORJ%=0TO38:M%=K(J%)
640PRINTTAB(J%,N%);CHR$(M%)
650NEXT
660N%=N%+1
670NEXT
680ENDPROC
690DEFPROCscore
700PRINTTAB(0,20);CHR$(141)"SCORE ";SC
710PRINTTAB(0,21);CHR$(141)"SCORE ";SC
720PRINTTAB(20,20);CHR$(141)"HI-SCORE ";HSC
730PRINTTAB(20,21);CHR$(141)"HI-SCORE ";HSC
740ENDPROC
750DEFPROCpacmove
760PRINTTAB(X%,Y%);CHR$(P%)
770PROCscore
780PROCghostmove
790IF SKILL=2 THEN PROCghostmove
800A$=INKEY$(0)
810*FX15,1
```

```
820X1=X%:Y1=Y%
830IFA$="W" Y%=Y%-1:GOTO0880
840IFA$="X" Y%=Y%+1:GOTO0880
850IFA$="A" X%=X%-1:P%=251:GOTO0880
860IFA$="D" X%=X%+1:P%=247:GOTO0880
870GOTO920
880IF?(HIMEM+X%+Y%*40)=223 OR ?(HIMEM+X%+Y%*40)=192 THEN PROCdead
890IF?(HIMEM+X%+Y%*40)<>160 THEN 900 ELSE GOTO910
900IF?(HIMEM+X%+Y%*40)=164 THEN SC=SC+1:SOUND 0,-15,2,2 ELSE X%=X1:
Y%=Y1:GOTO920
910PRINTTAB(X1,Y1);CHR$(160)
920IF (SC+GSC)/SHEET=263 THEN SHEET=SHEET+1:CLS:GOTO90ELSE GOTO 760
930ENDPROC
940DEFPROCend
950PRINTTAB(0,20);CHR$(141);CHR$(134);CHR$(136);"SCORE ";SC
960PRINTTAB(0,21);CHR$(141);CHR$(134);CHR$(136);"SCORE ";SC
970IF SC>HSC THEN HSC=SC
980PRINTTAB(20,20);CHR$(141);CHR$(134);CHR$(136);"HI-SCORE ";HSC
990PRINTTAB(20,21);CHR$(141);CHR$(134);CHR$(136);"HI-SCORE ";HSC
1000PRINTTAB(X%,Y%);CHR$(P%);TAB(0,23)
1010*FX12,0
1020ENDPROC
1030DEFPROCghosts
1040U1=RND(35)+2:V1=RND(15)+3:IF U1>17AND U1<22 OR V1>9 AND V1<11
OR U1=13 AND V1=9 THEN GOTO1040
1050IF?(HIMEM+U1+V1*40)<>164GOTO1040
1060U2=RND(35)+2:V2=RND(15)+3:IF U2>17AND U2<22 OR V2>9 AND V2<11
OR U2=13 AND V2=9 THEN GOTO1060
1070IF?(HIMEM+U2+V2*40)<>164 THEN GOTO1060
1080PRINTTAB(U1,V1);CHR$(223);TAB(U2,V2);CHR$(192)
```



24 Church Street, Slough SL1 1PT. Telephone: Slough (STD 0753) 71535



ROMIK PROMISE A MINIMUM OF ONE NEW GAME EVERY MONTH

STRATEGIC COMMAND
by Alan J. Ovens

For the Dragon Computer.
As the name suggests Strategic Command is a game of strategy for two players, the object of which is to overrun the opponents capital. Each player has a capital that contains: 2 battleships, 3 destroyers, 1 aircraft carrier, 2 cruisers, 1 heavy artillery gun, 2 light tanks, 2 main battle tanks, 1 mechanised infantry unit. Each player also has a naval base with; 1 battleship, 2 destroyers, 1 aircraft carrier, 1 mine layer, 2 mine sweepers, 2 submarines, 3 patrol boats, 3 cruisers.
Each player also has an army base with; 1 mine layer, 2 light artillery guns, 2 mine sweepers, 1 main battle tank, 3 mechanised infantry units, 2 light tanks, 1 heavy artillery gun, 3 reconnaisance units. Each player can create up to ten task forces, of up to three units at any one time, mine fields can be laid, and swept, naval forces can engage, or be engaged by land forces if they come close enough, and up to three task forces from each side can engage each other in battle. There is also an air reconnaisance facility.
The game takes a few minutes to learn, but can take anything from a few minutes, to several hours to play, depending on the skill of the players.

MARTIAN RAIDER
by Cliff Ramshaw

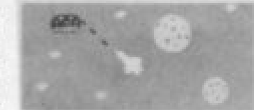


Our top selling game for the unexpanded VIC 20, Martian Raider is a machine code, arcade quality game. You are the pilot of an intergalactic battle ship, your mission is to bomb the cities, ammunition dumps, and ground to air missiles of the evil Martian overlords. Attacking you are the U.F.O.s, meteorite storms, and the ground to air missiles. All of which (if you are quick enough), you can shoot down. You have a limited time to complete your mission. But this time is extended each time you hit an ammunition dump. If you lose one of your three lives (a bonus life is awarded at 10,000 points) you will get additional time with the new life. There are several  different screens which advance automatically during play, superb graphics and action. Uses joystick, or easy to use keyboard controls.

MULTISOUND SYNTHESISER
by Darren Hall

For the unexpanded VIC 20 (in machine code of course) the synthesiser is split into four main sections. 1, normal; 2, normal with drum; 3, programmable background music; 4, white noise. Each section is accessed by pressing one of the four function keys.
Music can be played like a normal organ or synthesiser by using the 2 rows of keys "Q" to "*" & "A" to "=". By pressing certain keys, different harmonics and sound effects may be created. Up to 4 tunes of up to 255 notes each can be created as background music, and can be saved to tape for reloading at a later date. A background tune plus the drum beat (choice of 6) can be played together, and at the same time you can play another tune over the top, the rhythm can be speeded up or slowed down, etc., etc., etc.

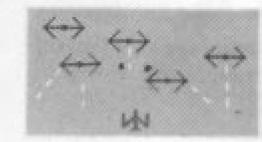
MOONS OF JUPITER
by Dave Byrden



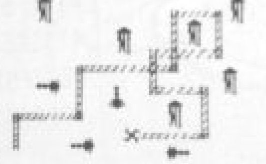
For the expanded VIC 20. Will run in 3K and/or 8K and/or 16K. Moons of Jupiter is a machine code arcade quality game with absolutely brilliant actions and graphics, with 3 skill levels. The game is similar in concept to asteroids, but with better action and graphics: you have to shoot the moons which then break up into smaller fragments, which you also have to shoot and yet again they will break up, all the time coming at you from different directions and at different speeds. Watch out for the U.F.O.s, but even more deadly are the Gologs, these you cannot shoot, you have to lure them into the moons to destroy them. You start with 5 lives and gain one additional life each time you clear the screen. Uses joystick or easy to use keyboard controls.

SPACE ATTACK
by Cliff Ramshaw

For the unexpanded VIC 20.
Space Attack is a machine code arcade quality game with extremely good graphics, and 3 starting skill levels.
There are four different waves of different alien space ships, which attack you (as the pilot of an inter galactic battleship) with increasing speed and ferocity, each wave coming faster than the last, and shoot in up to three different directions as they attack, making dodging them extremely difficult, you more or less have to keep firing and moving all the time.



SHARK ATTACK
by Cliff Ramshaw

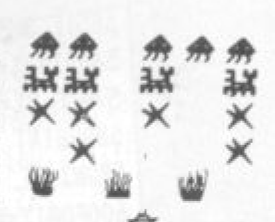


For the unexpanded VIC 20. Shark Attack is a machine code, arcade quality game. You have only three lives. You are in shark infested waters after being thrown overboard from a pirate ship. Your only protection being an atomic net which you trail behind you. Trying to trap the sharks (hopefully all together) and procede to fill the screen with the net. If you stop, or cover your tracks for too long the sharks will escape and come after you. Each time you will fill the screen with your net. The screen will clear, two octopuses will appear, and the sharks will increase their ferocity of attack. Each additional time that you fill the screen, two extra octopuses will appear, and the sharks will grow more ferocious. Uses joystick, or easy keyboard controls.

SPACE FORTRESS
by Darren Hall

For the unexpanded VIC 20, available early February. Space Fortress is a machine code arcade quality game with brilliant action and clean very attractive graphics, and absolutely amazing sound effects and probably the best game for the VIC 20 from any manufacturer to date. There are 20 skill levels, but you always start at skill level one, first of all you are attacked by 3 waves of the suicide squad, then 3 waves of sidewinders then 3 waves of sistorian swoopers. Finally you are attacked by the purple avengers. All these different deadly defence forces attack you using different methods of attack. After you have destroyed the last wave of purple avengers, the Space Fortress appears, this you have to shoot down before it puts up its defence shields and disappears into hyperspace. If you shoot it down you advance to the next skill level. If you fail, you go back to the skill level that you were on. Each time you destroy the fortress you gain an additional life (you start with 5).

SEA INVASION
by Cliff Ramshaw



Sea Invasion is a machine code, arcade quality game, similar in concept to "Space Invaders" but much better in many respects. There are five skill levels; 1, beginner; 2, trainee; 3, semi-professional; 4, professional; 5, ace; so no matter how fast or slow your reflexes are, there is a speed to match your skill. Unlike Space Invaders, the creatures do not move left then right, etc., but move off the right of the screen, and come back from the left, so there is no safe place to hide. Uses joystick, or easy keyboard controls.

SUPER NINE
by Ian Morrison and David Anderson
for the unexpanded ZX81

Altogether there are nine machine code games, all on the one tape. CANYON: you have to guide your space ship along a canyon which gets progressively narrower. 50 skill levels and 50 speed levels.
ASTEROIDS. You have to guide your ship across the screen, avoiding the asteroids. 10 skill levels. 50 speed levels.
ASTRO BLASTER. The object of the game is to shoot down the fireballs, asteroids, and enemy craft.
DEFENDER. The object of the game is to shoot down the enemy craft and save the humanoids.
SQUASH. A two player game of squash, both players being able to move simultaneously, the loser being the first one to miss the ball 3 times.
SCRAMBLE. You have to avoid the mountainous landscape, shoot down the rockets and blast the ammunition dumps.
SKETCH. Create your own pictures on your TV screen, with rub out facility, also you can copy your artwork to the ZX printer.
COSMIC RAIDER. You must shoot down the aliens whilst avoiding the clouds and mountains.
FOUR THOUGHT. A two player game, the object of which is to get four counters of your own in a row, horizontally, vertically, or diagonally.

NEW GAMES... AVAILABLE EARLY MARCH...

Vic 20 . . . Power Blaster (unexpanded) . . . The year is 2201, the Universe has been ravaged by many wars. You are the commander of a Venusian defence force patrol ship, your mission is to blast away the remote control high power bombs which are being planted by the Martian overlord's personal attack force. . . .
Vic 20 . . . Time Destroyers (expanded . . . +3K, or +8K, or +16K) . . . You are the commander of a fleet of destroyers, your mission is to save the Universe from being disintegrated by the Vortenians, a race of aliens from a distant galaxy, who have found a way of destroying the space/time continuem, without affecting their own galaxy. . . .

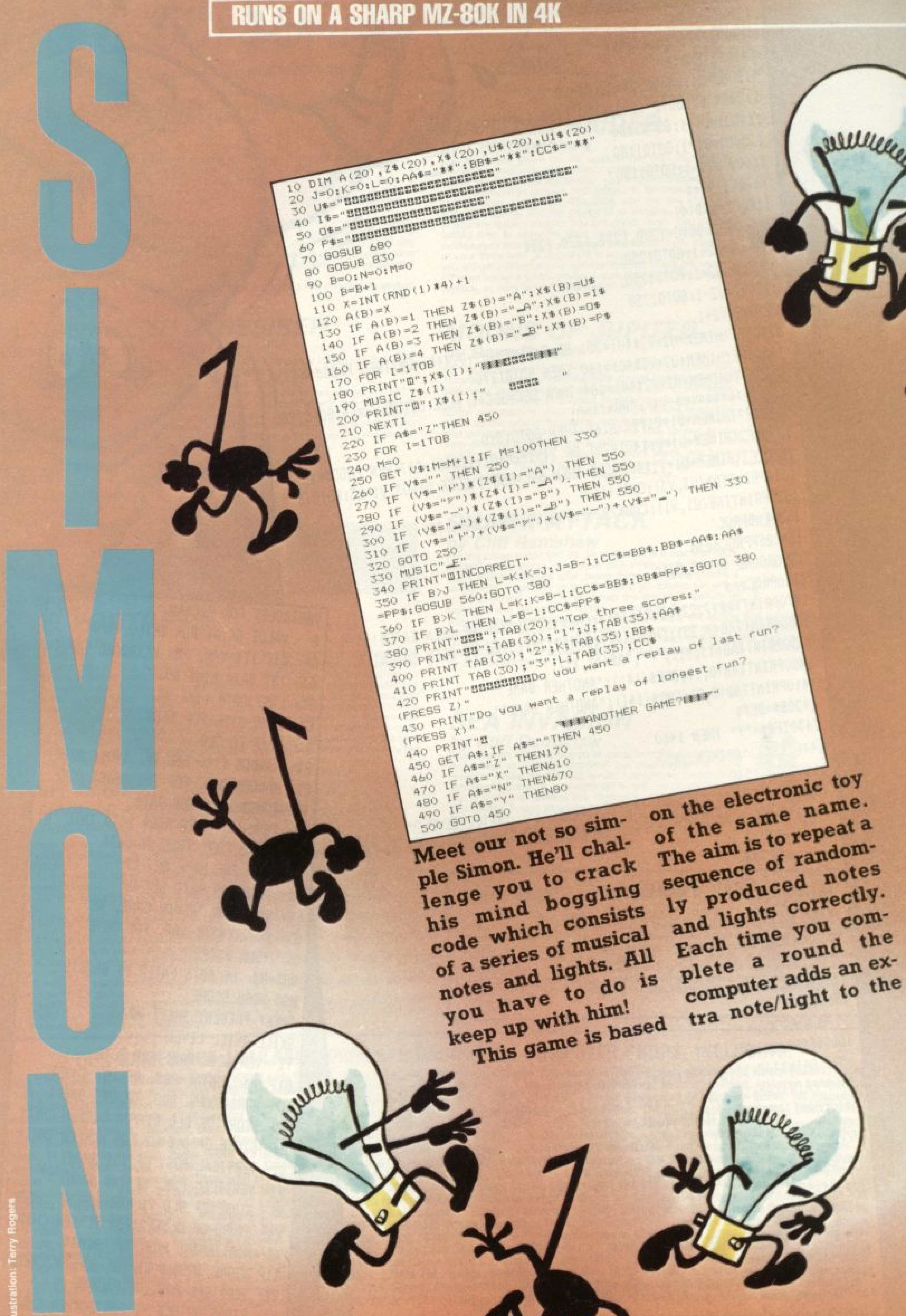
OUR GAMES ARE AVAILABLE FROM ALL GOOD HOME COMPUTER SHOPS, INCLUDING:

Micro C inside Currys at: Birmingham (233 1105), Leeds (46601), Luton (425079), Nottingham (412455), Southampton (29676), inside Bridgers at: Bristol (650501), New Malden (01-949 2091), and at: Leicester (546224), London (01-387 9275), Manchester (834 0144) . . . Chromasonic Electronics, 48 Junction Road, Archway, London N19 (01-263 9493/9495), Maplin Electronic Supplies Ltd., P.O. Box 3, Rayleigh, Essex (0702 552911/554155), Gemini Electronics, 50 Newton Street, off Piccadilly, Manchester (236 3083), Gamer, 24 Gloucester Road, Brighton . . . Dixons, Queensmere, Slough (23211) . . . Channel One, 174 High Street, Hornchurch, Essex (75613) and Golden Cross Parade, Rochford, Essex (540455), Twill Star Computer, 17 Regina Road, Southall . . . Data Assette, 44 Shroton Street, London NW1 . . . Graham & Son, 51 Gortin Road, Omagh, N. Ireland . . . Ram Electronics, 88 Fleet Road, Fleet, Hants. (5858) . . . Eccleston Electronics, Legge Lane, Birmingham . . . The Computer Centre, 14 Hemmels, Laindon, Essex (0268 416155) . . . Microspot, 15 Moorfields, Liverpool . . . R. Seedle, 47 Woodlands Road, Ansdell, Lytham St. Annes . . . Cambridge Computer Centre, 1 Emmanuel street, Cambridge . . . Karlinda & Co., Elliott Road, Selly Oak, Birmingham . . . The Sharp Computer Shop, Melville Street, Lincoln . . . Milequip, 7A Hare Lane, Gloucester (411010) . . . North West Business Machines, Curate Street, Great Harwood, Lancs . . . Instep Footwear, 23 King Street, Great Yarmouth . . . J.A.D., 21 Market Avenue, Plymouth (669462) . . . Metyclean, 92 Victoria Street, London SW1 (01-828 2511) . . . Metyclean, 137 The Strand, London WC2 (01-240 2321) . . . Metyclean, 177 London Road, Croydon (01-686 8626) . . . All branches of Laskeys, Vic Centre, 154 Victoria Road, Acton W3 (01-992 9904) . . . A. C. Systems, Exeter . . . Microtrading, Birmingham . . . Supersoft, Harrow . . . Anirog Computers, Horley, Surrey (346083) . . . Ozwise Computers, Harrow (429 1060) . . . Cavendish Data Systems, South Norwood (656 8941) . . . Software Master, 30 Lincoln Road, Birmingham . . . Tomorrow's World, Dublin . . . Algray Software, Barnsley (83199) . . . Computer & Business Systems, Nelson, Lancs. (0282) 601191) . . . Dyad Developments, Oxon. (08446 729) . . . Leisuronics/Blackpool Computer Stores (0253 27091) . . . Carlow Radio Ltd., Bedford (60447) . . . Byte Shop Computerland, Glasgow (221 7409); Nottingham (40576); Manchester (236 4737) . . . First Byte Computers, Main Centre, Derby (365280) . . . Simmons Magee Computers Ltd., Twickenham (891 4477) . . . Capital Computer Systems, Ilford (553 3026) . . . A.O.M. Business Systems, L.V.E. Building, Leicester (548923) . . . Jutea Ltd., Bridge, Near Canterbury, Kent (0227 830083) . . . Twickenham Computer Centre (01-892 7896) . . . Kent Microcomputers, Maidstone (0622 52784) . . . J.S. Simnett Computers Ltd., The Computer Shop, Kingston (01-546 3793) . . . Chris Denning Ltd., Poole (0202 761859) . . . Yorkshire Micro Computers, Scarborough, Yorks. (0723 78136) . . . Taylor Wilson Systems, Oakfield House, Station Road, Dorridge.

```
1090ENDPROC
1100DEFPROCghostmove
1110E%=RND(4)
1120U3=U1:V3=V1:U4=U2:V4=V2
1130ON E% GOTO 1140,1150,1160,1170
1140U1=U1-1:GOTO1180
1150U1=U1+1:GOTO1180
1160V1=V1-1:GOTO1180
1170V1=V1+1
1180F%=RND(4)
1190ONF% GOTO 1200,1210,1220,1230
1200U2=U2-1:GOTO1250
1210U2=U2+1:GOTO1250
1220V2=V2-1:GOTO1250
1230V2=V2+1
1240IF?(HIMEM+U2+V2*40)=251 OR ?(HIMEM+U2+V2*40)=247THEN PROCdead
1250IF?(HIMEM+U2+V2*40)=160 THEN GOTO1270
1260IF?(HIMEM+U2+V2*40)=164 THEN GSC=GSC+1 ELSE U2=U4:V2=V4:GOTO1280
1270PRINTTAB(U4,V4);CHR$(160)
1280IF?(HIMEM+U1+V1*40)=160 THEN GOTO1310
1290IF?(HIMEM+U1+V1*40)=251 OR ?(HIMEM+U1+V1*40)=247THEN PROCdead
1300IF?(HIMEM+U1+V1*40)=164 THEN GSC=GSC+1 ELSE U1=U3:V1=V3:GOTO1320
1310PRINTTAB(U3,V3);CHR$(160)
1320PRINTTAB(U1,V1);CHR$(223);TAB(U2,V2);CHR$(192)
1330ENDPROC
1340DEFPROCdead
1350SOUND 0,-15,5,10
1360PROCend
1370PRINTTAB(7,22);CHR$(141);CHR$(129);"YOU'VE BEEN EATEN!!"
1380PRINTTAB(7,23);CHR$(141);CHR$(129);"YOU'VE BEEN EATEN!!"
1390PRINTTAB(X1,Y1);" ";TAB(X%,Y%);" "
1400PRINTTAB(0,1);CHR$(141);"ANOTHER GAME?"
1410PRINTTAB(0,2);CHR$(141);"ANOTHER GAME?"
1420B$=GET$
1430IFB$="Y" THEN 1460
1440IFB$<>"N"THEN 1420
1450GOTO 1540
1460PRINTTAB(17,1);CHR$(141);CHR$(130);"   SKILL LEVEL?"
1470PRINTTAB(17,2);CHR$(141);CHR$(130);"   SKILL LEVEL?"
1480A$=GET$
1490A=VAL(A$)
1500IF A<1 OR A>2 THEN 1480
1510SKILL=A
1520CLS
1530GOTO 80
1540CLS
1550*FX12,0
1560END
1570ENDPROC
1580DEFPROCintro
1590 PRINTTAB(15,5);CHR$(141);CHR$(131);"PACMAN"
1600 PRINTTAB(15,6);CHR$(141);CHR$(131);"PACMAN"
1610PRINTTAB(10,10);CHR$(130);"CONTROLS"
1620PRINTTAB(10,12);"'W' - UP";TAB(10,13);"'X' - DOWN";TAB(10);
"'A' - LEFT";TAB(10);"'D' - RIGHT"
1630PRINTTAB(12,18);CHR$(129);"SKILL LEVEL(1 OR 2)?"
1640A$=GET$
1650A=VAL(A$)
1660IF A<1 OR A>2 THEN 1640
1670SKILL=A
1680PRINTTAB(10,23);CHR$(131);"HIT ANY KEY TO CONTINUE"
1690A$=GET$
1700ENDPROC
```

VARIABLES FOR PACMAN

- A - VALUE OF A$ FOR SKILL INPUT
- A$- UTILITY VAR. FOR KEYBOARD INPUT
- A%- 1ST DATA LINE NO.
- B%- LAST DATA LINE NO.
- C%- STEP SIZE FOR DATA
- D%- MAZE COLOUR
- E%- RANDOM VAR. FOR 1ST GHOST MOVE
- F%- RANDOM VAR. FOR 2ND GHOST MOVE
- I%- COUNT VAR. FOR DATA
- J%- COUNT VAR. TO READ DATA INTO 'K'
- K - ARRAY FOR STORE OF DATA
- M%- VAR. FOR MAZE SET-UP
- N%- VPOS FOR MAZE SET-UP
- P%- VAR. FOR PACMAN CHAR. NO.
- S%- HORIZONTAL VAR. FOR DOTS
- SC- YOUR SCORE
- GSC-NO. OF DOTS EATEN BY GHOSTS
- HSC-HIGH SCORE
- SHEET-PRESENT SHEET NO.
- SKILL-SKILL LEVEL
- T%- VERTICAL VAR. FOR DOTS
- U1- HORIZONTAL POS. OF 1ST GHOST
- U2- HORIZONTAL POS. OF 2ND GHOST
- U3- STORE OF OLD U1 FOR SCREEN CHECK
- U4- STORE OF OLD U2 FOR SCREEN CHECK
- V1- VERTICAL POS. OF 1ST GHOST
- V2- VERTICAL POS. OF 2ND GHOST
- V3- STORE OF OLD V1 FOR SCREEN CHECK
- V4- STORE OF OLD V2 FOR SCREEN CHECK
- X%- HORIZONTAL POS. OF PACMAN
- X1- STORE OF OLD X% FOR SCREEN CHECK
- Y%- VERTICAL POS. OF PACMAN
- Y1- STORE OF OLD Y% FOR SCREEN CHECK

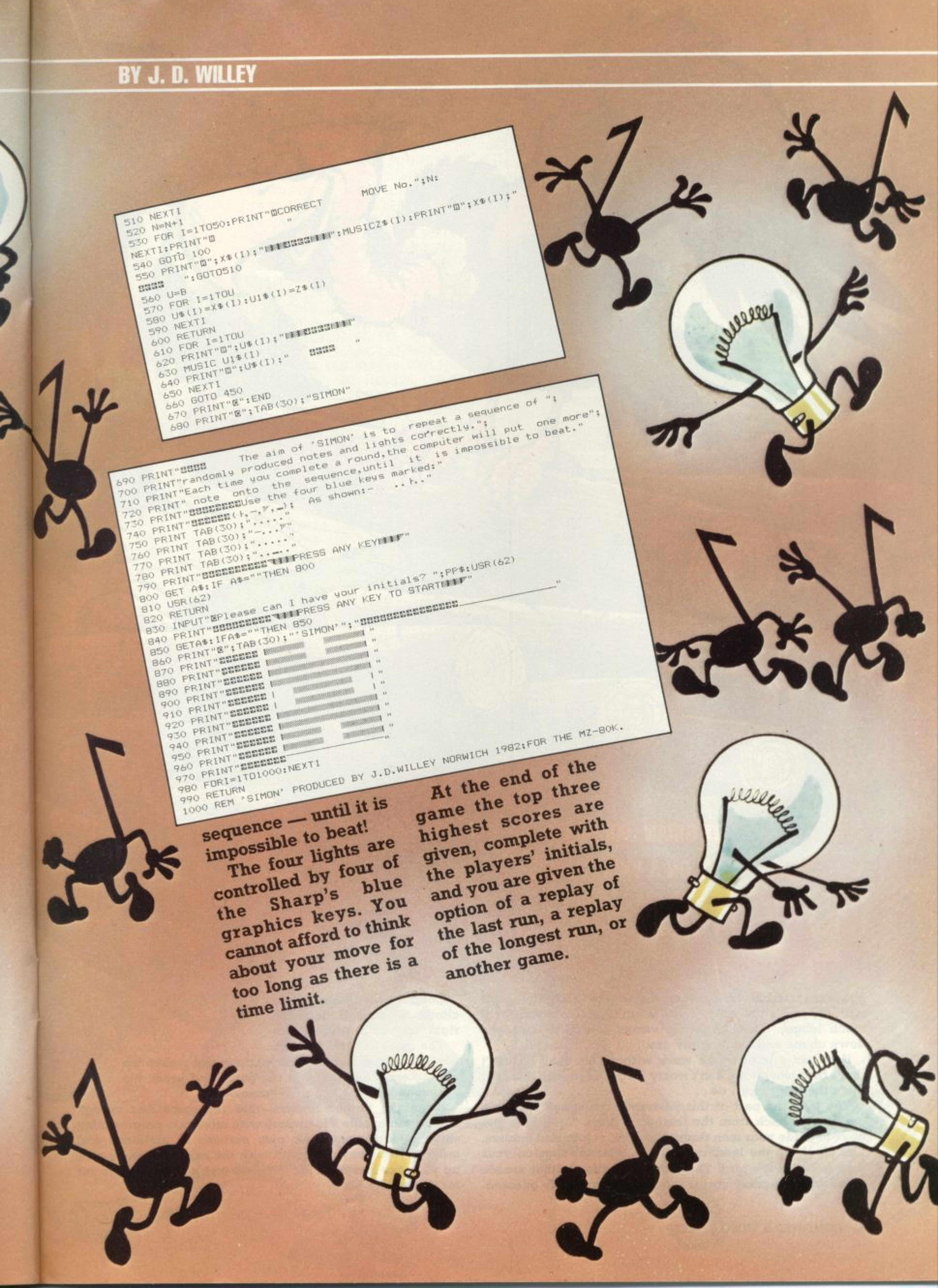


RUNS ON A SHARP MZ-80K IN 4K

```
10 DIM A(20),Z$(20),X$(20),U$(20),U1$(20)
20 J=0:K=0:L=0:AA$="**":BB$="**":CC$="**"
30 U$="■■■■■■■■■■■■■■■■■■■■"
40 I$="■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■"
50 O$="■■■■■■■■■■■■■■■■■■■■"
60 P$="■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■■"
70 GOSUB 680
80 GOSUB 830
90 B=0:N=0:M=0
100 B=B+1
110 X=INT(RND(1)*4)+1
120 A(B)=X
130 IF A(B)=1 THEN Z$(B)="A":X$(B)=U$
140 IF A(B)=2 THEN Z$(B)="_A":X$(B)=I$
150 IF A(B)=3 THEN Z$(B)="B":X$(B)=O$
160 IF A(B)=4 THEN Z$(B)="_B":X$(B)=P$
170 FOR I=1TOB
180 PRINT"■";X$(I);"■■■■■■■■"
190 MUSIC Z$(I)
200 PRINT"■";X$(I);"    ■■■■    "
210 NEXTI
220 IF A$="Z"THEN 450
230 FOR I=1TOB
240 M=0
250 GET V$:M=M+1:IF M=100THEN 330
260 IF V$="" THEN 250
270 IF (V$="ﾄ")*(Z$(I)="A") THEN 550
280 IF (V$="ﾞ")*(Z$(I)="_A"). THEN 550
290 IF (V$="–")*(Z$(I)="B") THEN 550
300 IF (V$="_")*(Z$(I)="_B") THEN 550
310 IF (V$="ﾄ")+(V$="ﾞ")+(V$="–")+(V$="_") THEN 330
320 GOTO 250
330 MUSIC"_E"
340 PRINT"■INCORRECT"
350 IF B>J THEN L=K:K=J:J=B-1:CC$=BB$:BB$=AA$:AA$
=PP$:GOSUB 560:GOTO 380
360 IF B>K THEN L=K:K=B-1:CC$=BB$:BB$=PP$:GOTO 380
370 IF B>L THEN L=B-1:CC$=PP$
380 PRINT"■■■";TAB(20);"Top three scores:"
390 PRINT"■■";TAB(30);"1";J;TAB(35);AA$
400 PRINT TAB(30);"2";K;TAB(35);BB$
410 PRINT TAB(30);"3";L;TAB(35);CC$
420 PRINT"■■■■■■■■Do you want a replay of last run?
(PRESS Z)"
430 PRINT"Do you want a replay of longest run?
(PRESS X)"                        ■■■ANOTHER GAME?■■■"
440 PRINT"■
450 GET A$:IF A$=""THEN 450
460 IF A$="Z" THEN170
470 IF A$="X" THEN610
480 IF A$="N" THEN670
490 IF A$="Y" THEN80
500 GOTO 450
```

Meet our not so simple Simon. He'll challenge you to crack his mind boggling code which consists of a series of musical notes and lights. All you have to do is keep up with him!

This game is based on the electronic toy of the same name. The aim is to repeat a sequence of randomly produced notes and lights correctly. Each time you complete a round the computer adds an extra note/light to the



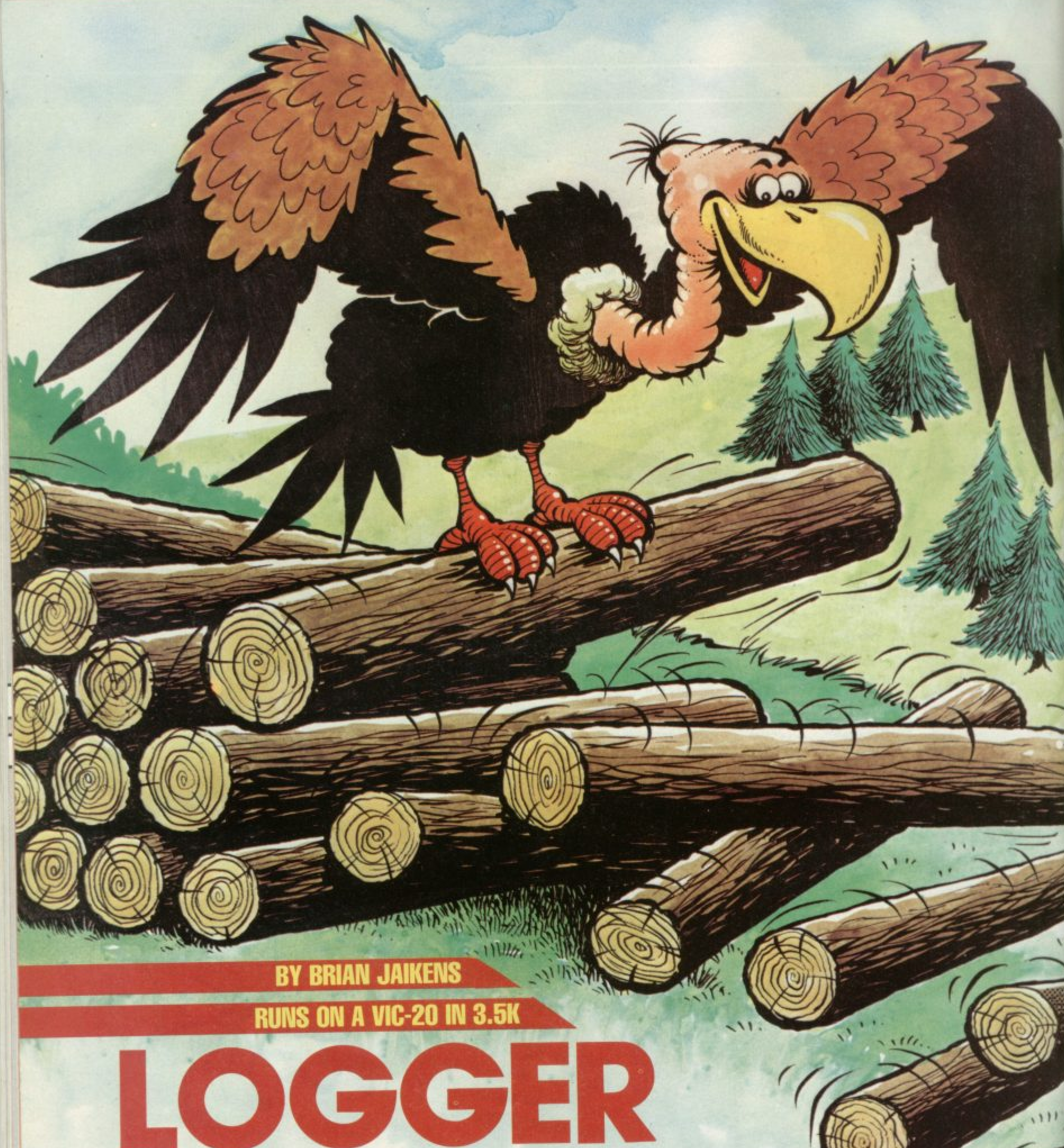
BY J. D. WILLEY

```
510 NEXTI
520 N=N+1
530 FOR I=1TO50:PRINT"CORRECT                MOVE No.";N:
NEXTI:PRINT"                "
540 GOTO 100
550 PRINT"";X$(I);"":MUSICZ$(I):PRINT"";X$(I);"
    ";GOTO510
560 U=B
570 FOR I=1TOU
580 U$(I)=X$(I):U1$(I)=Z$(I)
590 NEXTI
600 RETURN
610 FOR I=1TOU
620 PRINT"";U$(I);"                "
630 MUSIC U1$(I)
640 PRINT"";U$(I);"    "
650 NEXTI
660 GOTO 450
670 PRINT"":END
680 PRINT"";TAB(30);"SIMON"
690 PRINT"        The aim of 'SIMON' is to  repeat a sequence of ";
700 PRINT"randomly produced notes and lights correctly.";
710 PRINT"Each time you complete a round,the computer will put  one more";
720 PRINT" note  onto  the  sequence,until  it  is impossible to beat."
730 PRINT"Use the four blue keys marked:"
740 PRINT"(,-,,-);  As shown:-   ....."
750 PRINT TAB(30);"....."
760 PRINT TAB(30);"-...."
770 PRINT TAB(30);"....."
780 PRINT TAB(30);"..-.."
790 PRINT"PRESS ANY KEY"
800 GET A$:IF A$=""THEN 800
810 USR(62)
820 RETURN
830 INPUT"Please can I have your initials? ";PP$:USR(62)
840 PRINT"PRESS ANY KEY TO START"
850 GETA$:IFA$=""THEN 850
860 PRINT"";TAB(30);"'SIMON'";"______________________"
870 PRINT"        "
880 PRINT"        "
890 PRINT"        "
900 PRINT"        "
910 PRINT"        "
920 PRINT"        "
930 PRINT"        "
940 PRINT"        "
950 PRINT"        "
960 PRINT"        "
970 PRINT"________"
980 FORI=1TO1000:NEXTI
990 RETURN
1000 REM 'SIMON' PRODUCED BY J.D.WILLEY NORWICH 1982:FOR THE MZ-80K.
```

sequence — until it is impossible to beat!

The four lights are controlled by four of the Sharp's blue graphics keys. You cannot afford to think about your move for too long as there is a time limit.

At the end of the game the top three highest scores are given, complete with the players' initials, and you are given the option of a replay of the last run, a replay of the longest run, or another game.



BY BRIAN JAIKENS

RUNS ON A VIC-20 IN 3.5K

LOGGER

Squaaaaaarrrrkk! There goes that pesky bird, flying off with my axe agin! Ah tell you, I ain't goin' to stand for it much longer. That feathered varmit keeps on swoopin' down on me and stealing my axe.

How can a lumberjack work without his axe? He can't that's the answer! But don't worry I'll get even with that bird if it's the last thing I do . . .

You take the part of this pestered lumberjack and help get his axe back from the feathered fiend. To do this you have to guide your man through a maze of logs and ladders. You climb up the ladders and leap over the logs on your way to catch the bird. The game is similar to that arcade game with the crazy gorilla — as you've probably guessed.

Control keys are: 'D' to climb; 'Z' and 'C' left and right; space bar to jump.

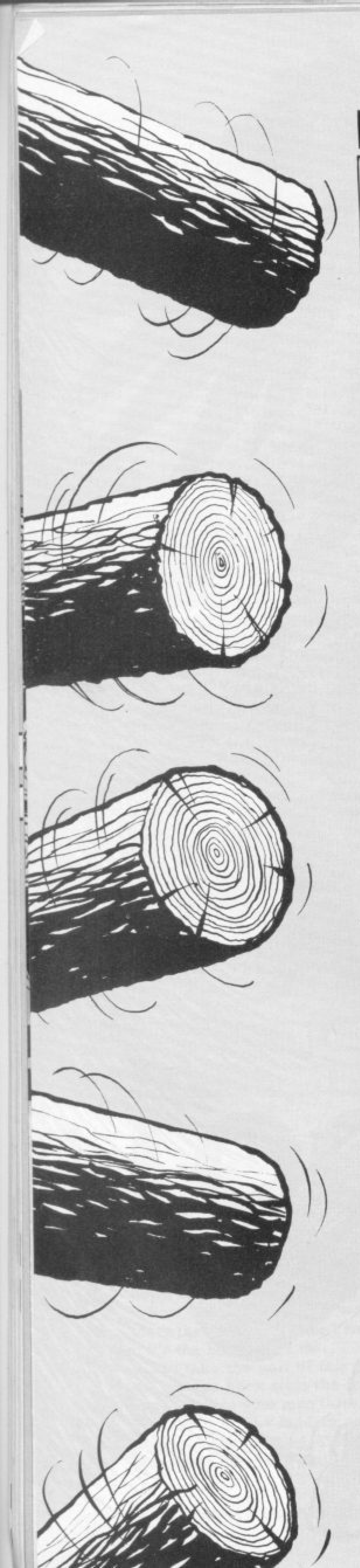
The game is split into two parts. The first lists the instructions and makes the characters. The second is the game and needs the 3K expander.

Brian the author reckons that the game has enough memory to enable Vic owners with moderate programming skills to work out their own screens of platforms and ladders once they get bored with the existing one. So pick up your axe and head for the trees and keeping an eye out for that pesky bird.

Illustrations: Terry Rogers



```
5 POKE51,0:POKE52,28:POKE55,0:POKE56,28:POKE36869,255:POKE36879,25
10 PRINT"■        LOGGER"
11 PRINT"       ■─────■          BY BRIAN JAIKENS"
12 PRINT"■ YOU ARE A LUMBERJACK  WHO HAS JUST HAD HIS  AXE STOLEN BY A BIRD"
13 PRINT"■ )* ■ YOU MUST GET TO■   +,■ THE BIRD BY USING ■ -.■   LADDERS AND"
14 PRINT"      JUMPING LOGS"
15 PRINT"■ ON YOUR WAY YOU CAN  GET BONUS POINTS AND  AND AN EXTRA MAN EVERY"
16 PRINT"■      8000 POINTS"
17 PRINT"■■      THE CONTROLS ARE"
18 PRINT"          D  CLIMB"
19 PRINT"        Z C LEFT RIGHT"
20 PRINT"     SPACE BAR TO JUMP"
21 PRINT"■       BY SNAILSOFT"
65 FORI=7168TO7679:READC:POKEI,C:NEXT
70 DATA60,66,153,165,165,153,66,60
71 DATA60,102,102,126,102,102,102,0
72 DATA124,102,102,124,102,102,124,0
73 DATA60,102,96,96,96,102,60,0
74 DATA124,102,102,102,102,102,124,0
75 DATA124,96,96,120,96,96,124,0
76 DATA124,96,96,120,96,96,96,0
77 DATA60,102,96,110,102,102,60,0
78 DATA102,102,102,126,102,102,102,0
79 DATA24,24,24,24,24,24,24,0
80 DATA12,12,12,12,12,108,56,0
81 DATA102,108,120,112,120,108,102,0
82 DATA96,96,96,96,96,96,124,0
83 DATA66,102,126,126,102,102,102,0
84 DATA70,102,118,126,110,102,102,0
85 DATA60,102,102,102,102,102,60,0
86 DATA124,102,102,124,96,96,96,0
87 DATA60,102,102,102,110,102,62,1
88 DATA124,102,102,124,120,108,102,0
89 DATA60,102,96,60,6,102,60,0
90 DATA126,24,24,24,24,24,24,0
91 DATA102,102,102,102,102,102,60,0
92 DATA102,102,102,60,60,24,24,0
93 DATA102,102,102,126,126,102,66,0
94 DATA102,102,60,24,60,102,102,0
95 DATA102,102,102,60,24,24,24,0
96 DATA126,6,12,24,48,96,126,0
97 DATA56,124,127,244,236,194,68,56
98 DATA122,127,126,56,56,48,48,56
99 DATA28,62,254,47,55,67,34,28
100 DATA94,254,126,28,12,12,12,28
101 DATA126,66,126,66,126,66,126,66
102 DATA0,0,0,0,0,0,0,0
103 DATA28,62,62,127,127,127,62,28
105 DATA62,127,127,127,54,54,118,7
106 DATA62,127,127,127,54,54,55,112
107 DATA50,254,254,50,48,48,48,48
108 DATA38,52,8,62,125,125,123,62
109 DATA48,56,36,38,111,253,214,96
110 DATA135,133,165,165,245,37,39,0
111 DATA103,149,149,101,149,149,103,0
112 DATA7,9,29,31,27,12,100,254
113 DATA192,32,112,240,176,96,76,254
114 DATA255,248,242,240,225,104,98,96
115 DATA254,62,30,94,14,44,12,76
116 DATA100,48,26,15,4,4,28,62
117 DATA44,152,48,224,64,64,112,248
118 DATA255,194,127,194,255,66,126,66
119 DATA60,102,110,126,118,102,60,0
120 DATA8,24,56,24,24,24,60,0
121 DATA60,102,6,60,96,96,126,0
122 DATA60,102,6,28,6,102,60,0
123 DATA12,28,60,108,126,12,12,0
124 DATA126,96,124,6,6,102,60,0
125 DATA60,102,96,124,102,102,60,0
126 DATA126,102,12,24,24,24,24,0
127 DATA60,102,102,60,102,102,60,0
128 DATA60,102,102,62,6,102,60,0
129 DATA255,170,85,170,255,0,0,0
130 DATA96,255,255,7,3,0,0,0
131 DATA3,4,9,10,10,9,4,3
132 DATA192,32,144,80,80,144,32,192
133 DATA0,0,0,7,143,255,255,199
134 DATA4,20,62,239,231,223,254,50
140 PRINT"       PRESS A KEY"
145 GETA$:IFA$=""THEN145
150 PRINT"■ ■■■■■■ NOW LOAD
VIC LOGGER"
152 PRINT"HOLD DOWN THE
SHIFT KEY AND TAP THE RUN
STOP KEY  NOW"
```



LISTING 2

```
3 SC=0:NM=3:BM=8000:BR$="█-.▌██+,▌██)*":BP=1000:SC$="██SCORE"
4 FL=2:POKE36879,25:PRINT"▌":PF=1:PO$="███████████████████████":POKE36878,15
5 BP$="█BONUS██████POINTS████████"
7 GOSUB1000:PRINT"▌"
8 FORL1=38400TO38400+506:POKEL1,2:NEXTL1
14 R1$="███":R2$="██":PL$="::::::::::::::::::":MN=8117:MC=38837:H=29:B=38
15 GOSUB600:ONPFGOSUB400,430,450
19 TI$="000000":TM$=TI$:PB=BP
20 LG=7775:DR=2:GOSUB60
22 GOSUB300
23 IFLG<=7775ANDPEEK(LG-22)=31THENPOKELG,31:GOTO20
24 IFLG<=7775THENPOKELG,32:GOTO20
25 K=PEEK(197)
30 IFK=64THEN40
32 IFK=33ORK=34ORK=32ANDH<>33THENGOSUB650
36 IFK=18ANDPEEK(MN-22)=31THENGOSUB750
40 IFVAL(TI$)>VAL(TM$)ANDPB>0THENPB=PB-10:TM$=TI$
41 PRINTSC$SC:PRINT"█"TAB(15)BP$PB"█ "
42 IFSC=>BMANDNM<5THENNM=NM+1:BM=BM+8000:GOSUB605:GOSUB612
43 IFPEEK(MN+44)=32ORPEEK(MN+44)=59THEN800
44 IFMN=<7753THEN900
45 IFLG>MN+35ANDPEEK(LG-22)=31THENPOKELG,31:GOTO20
46 IFLG>MN+35THENPOKELG,32:GOTO20
49 IFLG<8140THENPOKELG,32:GOTO22
50 GOTO20
60 POKEMN,H:POKEMC,0:POKEMN+22,B:POKEMC+22,0:RETURN
70 POKEMN,32:POKEMC,2:POKEMN+22,32:POKEMC+22,2:RETURN
100 FORI=MNTOMN+88STEP22:POKEMN,32:MN=I:MC=I+30720:GOSUB60:GOSUB300:NEXT
102 PB=PB-100:IFPB<0THENPB=0
103 RETURN
300 POKELG,32:IFDR=1ANDPEEK(LG+22)<>32THENLG=LG-1
306 IFDR=2ANDPEEK(LG+22)<>32THENLG=LG+1
307 IFPEEK(LG+22)=32THENFL=1
309 IFFL=1ANDPEEK(LG+22)=32THENLG=LG+22
310 IFFL=1ANDPEEK(LG+22)<>32THENFL=2:GOSUB325
311 IFDR=1ANDPEEK(LG-21)=31THENPOKELG+1,31
312 IFDR=2ANDPEEK(LG-23)=31THENPOKELG-1,31
314 IFLG=MN+22THEN807
319 POKELG,0
320 IFPEEK(LG+22)=HTHEN807
324 RETURN
325 IFDR=2THENDR=1:GOTO327
326 IFDR=1THENDR=2
327 RETURN
400 PRINT"█"LEFT$(PO$,6)R2$PL$LEFT$(PO$,10)R1$PL$LEFT$(PO$,14)R2$PL$LEFT$(PO$,18
)R1$PL$
401 PRINTLEFT$(PO$,22)PL$"::::";
403 POKE7807,47:POKE7882,47:POKE7983,47:POKE8058,47
404 FORI=22TO66STEP22:POKE7807+I,31:POKE7882+I,31:POKE7983+I,31:POKE8058+I,31:NE
XTI
420 RETURN
430 GOSUB400:CL=30720
432 POKE8061,59:POKE8061+CL,6:POKE8068+CL,6:POKE8068,59:POKE7979,59:POKE7979+CL,
6
434 POKE7974+CL,6:POKE7974,59:POKE7892,59:POKE7892+CL,6:POKE7885,59:POKE7885+CL
6
436 POKE7801,59:POKE7801+CL,6
440 RETURN
450 PRINT"█"LEFT$(PO$,6)R2$LEFT$(PL$,14)LEFT$(PO$,10)R2$"███"LEFT$(PL$,14)
451 PRINTLEFT$(PO$,14)R2$"███"LEFT$(PL$,16)
455 PRINTLEFT$(PO$,22)PL$"::::";
470 RETURN
600 PRINTLEFT$(PO$,4)"█  <="LEFT$(PO$,5)"█  @@"BR$
603 RESTORE:FORI=1TO2:READP1,P2:POKEP1,37:POKEP1+30720,7:POKEP2,38:POKEP2+30720,
4:NEXT
604 DATA8121,8052,7876,7945
605 FORI=1TONM+1:POKE7707+I,32:NEXT
606 FORI=1TONM:POKE7707+I,36:POKE38427+I,5:NEXT
610 RETURN
612 FORLO=1TO15:POKE36875,198:POKE36879,42:FORD=1TO50:NEXTD:POKE36875,0:POKE3687
9,191
614 FORD=1TO20:NEXTD,LO
620 RETURN
650 GOSUB70
651 IFK=33THENMN=MN-1:H=29:B=30:MC=MC-1
652 IFK=34THENMN=MN+1:H=27:B=28:MC=MC+1
654 IFMN=>8119THENMN=8119:MC=38839
655 IFMN=8097THENMN=MN+22:MC=MC+22
656 IFPEEK(MN+22)=37ORPEEK(MN+22)=38THENGOSUB60:GOSUB740
```

```
658 IFK=32THENGOSUB700
660 GOSUB60
662 IFH=29ANDPEEK(MN-21)=31THENPOKEMN+1,31:POKEMN+23,31
664 IFH=27ANDPEEK(MN-23)=31THENPOKEMN-1,31:POKEMN+21,31
667 IFPEEK(MN+44)=59THENGOSUB100
668 IFPEEK(MN+44)=32THEN800
669 POKE36877,203:POKE36877,0
675 POKE198,0:RETURN
700 IFH=29THENMN=MN-23:MC=MC-23
701 IFH=27THENMN=MN-21:MC=MC-21
702 GOSUB60:IFMN+44=LGTHENGOSUB730
703 IFPEEK(MN+66)=59THENPOKEMN+66,32:POKEMC+66,2:GOSUB730
704 IFPEEK(MN-22)=47THENJM=1
705 IFH=29ANDPEEK(MN+1)=31THENPOKEMN+23,31:POKEMN+45,31:GOSUB300:GOSUB70:GOTO709
706 IFH=27ANDPEEK(MN-1)=31THENPOKEMN+21,31:POKEMN+43,31:GOSUB300:GOSUB70:GOTO710
708 GOSUB300:GOSUB70
709 IFH=29THENMN=MN+21:MC=MC+21:IFJM=1THENPOKEMN-21,31:POKEMN+1,31:JM=0
710 IFH=27THENMN=MN+23:MC=MC+23:IFJM=1THENPOKEMN-23,31:POKEMN-1,31:JM=0
713 IFPEEK(MN+22)=37ORPEEK(MN+22)=38THENGOSUB740
719 GOSUB60:IFMN=8097ORMN=8096THENGOSUB70:MN=MN+22:MC=MC+22
720 RETURN
730 SC=SC+40:POKEMN+88,39:POKEMC+88,0:FORS=140TO200:POKE36874,S:NEXT:POKE36874,0
731 POKEMN+88,32:IFPEEK(MN+66)=47THENPOKEMN+88,31:POKEMC+88,2
733 RETURN
740 POKEMN+66,40:POKEMC+66,0:SC=SC+80:POKE36874,225:FORD=1TO100:NEXT:POKE36874,2
35
741 FORD=1TO100:NEXT:POKE36874,0:POKEMN+66,32:POKEMC+66,2:RETURN
750 H=33:B=34:FORI=1TO4:MN=MN-22:MC=MC-22
751 IFI=1THENPOKEMN+44,31:POKEMC+44,2
752 POKE36877,220:POKE36877,215:POKE36877,0
753 GOSUB60:GOSUB300:POKEMN+22,35
754 IFI<4THENPOKEMN+22,31:POKEMC+22,2
755 IFI=4THENPOKEMN+44,47:POKEMC+44,2
756 IFLG>MN+35THENPOKELG,32:LG=7775:DR=2
757 IFLG>MN+35ANDPEEK(LG-22)=31THENPOKELG,31:LG=7775:DR=2
767 IFLG<=7775THENPOKELG,32:LG=7775:DR=2
768 IFLG<=7775ANDPEEK(LG-22)=31THENPOKELG,31:LG=7775:DR=2
770 NEXTI:POKE36877,220:POKE36877,215:POKE36877,0:RETURN
800 POKEMN,32:POKEMC,2:MN=MN+22:MC=MC+22
804 IFPEEK(MN+44)=58THEN807
806 GOTO800
807 GOSUB70:IFH=27THEN813
808 POKEMN+22+1,63:POKEMC+22+1,0:POKEMN+22,62:POKEMC+22,0:POKEMN,32
809 GOSUB821
810 POKEMN+22+1,32:POKEMC+22+1,2:POKEMN+22,32:POKEMC+22,2:POKEMC,2:GOTO819
813 POKEMN+22-1,62:POKEMC+22-1,0:POKEMN+22,63:POKEMC+22,0:POKEMN,32
814 GOSUB821
815 POKEMN+22-1,32:POKEMC+22-1,2:POKEMN+22,32:POKEMC+22,2:POKEMC,2
819 NM=NM-1:GOSUB605:IFNM=0THEN3
820 POKELG,32:H=29:B=30:POKELG+30720,2:POKE198,0:GOTO14
821 DATA195,800,0,80,195,600,0,80,195,200,195,800,0,80,203,600,201,200,0,80,201,
600,195
824 DATA200,0,80,195,600,0,80,195,200,0,80,195,1000,-1
825 READP:IFP=-1THENRESTORE:FORD=1TO1500:NEXT:RETURN
826 READD:POKE36875,P:FORN=1TOD:NEXT:POKE36875,0:FORN=1TO20:NEXT:GOTO825
900 FORI=4TO1STEP-1
903 IFI>2THENPRINTLEFT$(PO$,I)TAB(4)BR$
905 IFI=2THENPRINTLEFT$(PO$,I)TAB(4)LEFT$(BR$,8)
906 IFI=1THENPRINTLEFT$(PO$,I)TAB(4)LEFT$(BR$,3)
907 IFI<5THENPRINTLEFT$(PO$,I+1)TAB(4)"  "
908 FORD=1TO500:NEXTD,I
910 PRINT"■"TAB(4)"  ":FORD=1TO1000:NEXT
915 IFPB<=0THEN940
917 FORL=1TO8:PRINT"■"TAB(15)"      ":FORD=1TO200:NEXT
918 PRINT"■■"TAB(15)"BONUS":FORM=180TO235STEP2:POKE36876,M::POKE36876,0:NEXTM,L
921 FORJ=1TOPBSTEP10:SC=SC+10:PB=PB-10:POKE36875,235
922 PRINTSC$SC:PRINT"■"TAB(15)BP$PB"■ ";
923 IFSC=>BMANDNM<5THENNM=NM+1:BM=BM+8000:GOSUB605:GOSUB612
924 POKE36875,0:NEXTJ
940 BP=BP+500:FORD=1TO1500:NEXT:GOSUB70:POKELG,32
941 IFBP=4000THENBP=1000
942 PF=PF+1:IFPF>2THENPF=1
950 GOTO14
1000 POKE198,0:PRINTCHR$(8)"▒▒ @      @@   @@   @@"
1001 PRINT" @    @  @ @  @ @  @"
1002 PRINT" @    @  @ @     @"
1003 PRINT" @    @  @ @ @@ @ @@"
1004 PRINT" @    @  @ @  @ @  @
1005 PRINT" @    @  @ @  @ @  @
1006 PRINT" @@@@  @@    @@    @@"
1007 PRINTTAB(6)"▒▒@@@@ @@@"
1008 PRINTTAB(6)"@     @  @"
1009 PRINTTAB(6)"@     @  @"
1010 PRINT" @@@  @@@@ @@@    @@@"
1011 PRINTTAB(6)"@     @ @"
1012 PRINTTAB(6)"@     @  @"
1013 PRINTTAB(6)"@@@@ @  @"
1014 PRINTTAB(5)"▒▒PRESS A KEY":POKE198,0
1015 GETA$:IFA$=""THEN1015
1040 POKE36879,191:RETURN
```



C & VG SOFTWARE FORM

Have you written a games program which you feel is just right for C&VG? If so we have come up with a form to ensure that we can test it out and give you our views on it, as quickly as possible.

We would prefer a tape and listing but can work from just a tape and will return it to you if it doesn't find its way into the magazine. We will also need an additional sheet explaining the game and its theme. And any documentation like lists of variables or how certain routines are working, would be of great help to beginners.

This form will merely help us to keep a check on your game as it goes through our testing process and make sure we have all the information we need to present it properly in the magazine.

If you don't want to cut up the magazine, we will accept photocopies or close copies of this page. This form will be appearing regularly in C&VG issues from now on.

Remember we pay £10 for each listing published and you could win our Programmer of the Year Contest where we will try to turn the winner into a best-selling games author.

Program name: ....

Machine make: .... Model ....

Other models it should run on: .... Number of K needed to run it: ....

Other equipment (joysticks, Extended Basic, add ons, etc.) needed to run it: ....

Author's Christian name: .... Surname: ....

Address: ....

....

.... Tel: .... Date: ....

Type of game: (If original please say so) ....

Loading instructions: ....

Game instructions: (If not included in the listing) ....

....

....

Office use only

Date received: ....

Acknowledgement sent: ☐

Name of evaluator: ....

Date sent out: ....

Date due back: ....

Needs to be returned to author for alterations: ☐ Date sent: ....

Due to be published in issue of magazine. ....

Evaluator's comments

Good enough to publish ☐

Needs some tidying up ☐

Not worth publishing ☐

Same game already published on this micro ☐

Wouldn't load ☐



DRAGON OWNERS
BARRELS OF FUN IN THE NEW
ANOTHER GREAT GAME FROM MICRODEAL – GUARANTEED TO KEEP YOU PLAYING FOR HOURS TRYING TO SAVE THE BEAUTY FROM THE BEAST.
ROLLING BARRELS!
KILLER FLAMES!
LADDERS AND RAMPS TO NEGOTIATE IN THE BEST GAME EVER FOR THE DRAGON 32 HOME COMPUTER.
DONKEY KING
FROM TOM MIX
NEW
DONKEY KING
MICRODEAL
Katerpillar Attack
Planet Invasion
SPACE WAR
Defense
Scarfman
DRAGON INVADERS
ALCATRAZ II
Flipper
ESCAPE
SPACE MONOPOLY
MANSION ADVENTURE 1
Jerusalem ADVENTURE 2
Williamsburg ADVENTURE 3
ULTIMATE
All Cassettes £8 each (including VAT & Postage)
AVAILABLE FROM DRAGON 32 DEALERS NATIONWIDE OR ORDER DIRECT FROM:
MICRODEAL
41 TRURO ROAD, ST. AUSTELL, CORNWALL PL25 5JE TEL 0726-67676
Send 1st Class Stamp for FREE Software Lists for Dragon and Tandy range of Computers.
AVAILABLE FROM SELECTED Boots & John Menzies STORES
WE WELCOME ACCESS
AMERICAN EXPRESS



MARVELLOUS MERCHANT

The Dictaria reign supreme in the galaxy for March. Their fleets superbly marshalled by a top merchant, David Jones of Grovesnor Park Gardens, Cliffe Lane, Leeds, have taken the lead in the battle for control of a Colecovision prize.

While many players fought their way through the gateway routes trying to find a route not crowded by pirates, the Dictaria cleverly took advantage of the galactic need for goods, including shipping much-needed supplies to wealthy Rorul which notched up a massive 595 trade index.

The way the wily Dictaria usually Moved before making the critical Trade showed how much thought their commander had put into the game this turn. We will be contacting David to arrange a shipment of software to Leeds.

Our top 10 scorers were: David with 2738 profit; **D. Speight,** Carleton, 2261; **S. Peattie,** Leeds, 2097; **S. Chambers,** Norwich, 1972; **C. Rennison,** Uxbridge, 1857; **J. Fowler,** Ewell, 1856; **G. Brown,** Washington, 1835; **D. Moore,** Gateshead, 1834; **A. Jones,** Heaviley, Stockport, 1830; **R. Hutchin,** Bishop's Stortford, 1776.

To have some better idea of how you fared, check your score against the following table: 239 players scored above 500; 400-499, 58 players; 300-399, 53 players; 200-299, 63 players; 100-199, 76 players; 0-99, 1173 players; and 1781 players scored below 0.

STARLORD CHANCE

Mike Singleton, who wrote the Seventh Empire program runs his own play-by-mail game, Starlord. Should you want to try your hand at a very different kind of galactic combat, Mike is offering all Seventh Empire players a chance to take part in Starlord.

Two free turns and a free rulebook will go to anyone who wants to take up his offer.

Just write to Mike at his address, which is given in the Seventh Empire Rulebook and quote your Seventh Empire code number for a free introduction to the worlds of Starlord.



THE BUGS' LAST WORD?

We did warn the Bugs that any interference in The Seventh Empire could result in extradition moves to return them to Techno-Drac's Castle, but they couldn't resist. . .

Snag Jnr. just reversed titles on the Plunder and Cargo Gateway Route figures. The result: we printed them the wrong way round in our March issue. This time the Black on White figures really do relate to the successful Cargo routes, while the Plunderers are printed white on black and take up most of the table (see below).

The computer will not allow empires to give Imperial Ships to players with a profit of nought or less. Many of you phoned up claiming ships last time and the confusion was such that we have decided not to award ships last turn.

Imperial Ships start off-board and only move on when a player has claimed them. Those claimed this turn are shown below.

The most common errors this month came from players who Attacked or Raided diagonally. Also beware of issuing a Trade order to a star system of the same type as the one you have immediately left.

And remember that you can **only** Attack in the second movement phase if you stayed in your own empire's star system during the first.

Remember to check your orders and make arrangements for "Lost in Space" fleets. But overall the entry this turn was very good. The **Raid Penalty** for turn three will be "1". The deadline for orders this month is **Wednesday March 23rd.**

Finally we have to call a halt on entries for the time being. Our discs will be filled this time as we have new entries aplenty for turn three.

Pictured above is the Colecovision which will go to the game's overall top scorer after the first six months.

IMPERIAL FLEETS

D'taan Empire: K. Gadman, Portisac, Cornwall. Sun Empire: R. Archer, Taunton. Pirate Empire: P. Nevins, Warrington. Bloodline Empire: S. Birch, Whitby. Dead Empire: D. Speight, Carlton. Amethyst Empire: B. M. Jones, Diss. Water Empire: S. Chambers, Norwich.

	As	Ba	Ca	Du	Er	Fa	Ga	He	Ix	Ji	Ko	Li	Mu	Nu	Op	Pu	Qa	Ri	So	Tu	Us	Va	Wi	Xu	Yu
Asol		500	250	1000	250	333		250	1000	250	200		125	200	250	100	250	500	250		333	66		200	250
Barov	500		333	333		83	500	500		125	500	1000	200	166	500		500	166	333		1000			333	166
Cazuv					100	62		500	200	166	500		83	111	200	142	50		250	500	166	1000		1000	500
Dusup	166	333	50		250	166	250		125				250	250	166	500	500	200	66			333	250	500	166
Erak	1000		1000	250		41	500	125	500				166	83		500	333		333	1000	1000		1000	166	
Fadis	500	500	1000	500	500		1000	66	250					333	1000	500	1000		200	100		166	1000	83	
Gazor	500		71		500	62		333	166		55	500		125	111	100			250			250	250	166	200
Hezod	333	250	500	166	100	125	33		125	250		100		500	125	35		500	250	100	166	1000	500	250	1000
Ixip		125	166	83		142	166	200			250		333	250	1000	250	66	62	500	166	333	83	111	166	
Jinis			1000	250	55	111	40	166			500		55	333		200	500	1000				100		125	
Kolol	1000		500		166	111	250		200	250				66			250	125	333	111	125	500			250
Lizag		333	1000	1000	1000	166			333	250	200			250	500	250	166		500			250	250	41	500
Mupip		200	500	333	11	50	83	333	55	166		500			333	333	500	250				1000			
Nuzet	333		250		333	333	1000		250	1000	111	1000										1000		500	500
Opod			200	1000	333	111			250				500	166	166	62	500	333	125	250		1000	333		166
Pulud	83	333	66	500		142	142			100	333	500	500	166	111		333				111	1000	333	250	
Qavuv		500	250	166		71	250	1000	333		1000		500	333						200	66			500	200
Rivev	1000		125			250	1000	250	55	100		1000	142			200	1000			1000		333	333		250
Soner		50	142	250		17	500	250	62		66	333	166	333	333	200	1000	250		250		166		142	1000
Tubox	250			250		333	250	1000	100	166	1000	166	1000		1000	1000	1000		500		500		250	166	500
Usugx	83	500	500		200	31	100	250	125	71	100	500	166	66	1000	100		166	100	66		333	250	250	100
Vasux	200	250	500	333	166	16	125		50			125	1000	500	500	1000	1000	333	500	166	250	500			
Widan		31	166	111	1000			333		500	500		500	500	500	333	1000		333	250		500		250	333
Xugod		250	500	500	1000	55	111	1000				500			500	111		500	250	250			1000		
Yuses			250	1000	1000	62	333	500						1000		166		1000	500	125	500	200	500	125	

TH EMPIRE



BATTLE REPORTS

Some 63 star systems were disrupted by the clamour of battle in turn No. 2 with the defenders holding out each time.

Once again the closest battle came at Olex which barely held onto Sun citizenship against a vast Pirate army from the neighbouring three systems.

The conflict inflicted heavy losses on the defenders who all took a −4 knock to their fleet's total. But in the light of this latest conflict, the two empires have declared a peace treaty for turn three.

The following system defenders suffered losses as a result of their valiant defences: **Hazan,** bonus −4; **Rurus,** bonus −3; **Olex,** bonus −5; **Sidal,** bonus −2; **Hakub,** bonus −4; **Apel,** bonus −4; **Rolek,** bonus −4; **Opod,** bonus −1; **Tubox,** bonus −3.

Three systems' defenders managed to salvage a profit from defeating wealthy attacking ships: **Xokeg,** bonus 2; **Meden,** bonus 3; **Otan,** bonus 2.

A few changes to the Diplomatic Diagram this turn. As already noted, a peace treaty has been negotiated between the Pirates and the Sun Empire. The Amethyst Empire has also declared peace with D'Taan's Empire.

The D'Taan's Empire has declared war on the Water Empire and the Pirate Empire. The Diplomatic Diagram below shows the changes. When a line connects two empires they are at war during turn three.

Looking ahead for likely trouble spots this turn, D'Taan's Empire's new foes may give it's Cazur system problems.

FOZUZ ○ 285 11	LARUB ♦ 190 731	YIBET ♦ 227 84	XOLIP ♥ 187 533	ITIL ♥ 184 133	FUNUS ♥ 173 600	LULIP ♦ 201 37	YANOK ♥ 200 263	XOKEG ♦ 210 150	ISOX ○ 154 87
VIZAX ○ 210 69	QIRUS ♥ 270 348	HAZAN ♦ 183 168	ABOB ○ 153 214	SONER * 414 94	VEPOZ ♥ 185 190	QATOT ○ 186 204	HEZOD * 429 96	ASOL * 359 34	SUXEK ♥ 259 352
BAROV * 333 75	WIDAN * 287 102	RURUS ○ 244 29	MUPIP * 432 47	NAXIG ○ 227 29	BETID ♦ 162 253	WAVAB ○ 161 115	RIVEV * 365 47	MEGUD ○ 228 211	NABOK ○ 217 37
DALIX ♥ 144 200	OLEX ♥ 236 400	TASAT ♥ 201 335	CAZUV * 329 108	GOVAX ♥ 220 300	DITUG ♦ 211 290	OKAP ♥ 265 363	TOXAZ ♦ 278 15	CIXAN ♦ 197 111	GOTEG ♥ 156 331
ERAK * 299 44	KOVEP ♦ 184 148	USUG * 355 71	PEBOB ♥ 183 303	JADEG ♦ 200 146	ENAK ○ 212 66	KEPAR ♥ 208 248	UGON ♦ 237 216	POROV ♦ 156 285	JINIS * 367 40
FADIS * 407 6	LOKIK ♥ 254 238	YUSES * 299 95	XAPUS ○ 246 26	IXIP * 502 91	FAGIL ♥ 215 232	LIZAG * 274 60	YODAZ ♦ 183 90	XUGOD * 363 63	IBED ♥ 192 381
VASUX * 289 65	QUXIN ○ 175 71	HIPEB ♦ 204 296	ASOR ○ 194 155	SIDAL ♥ 217 268	VIZET ♦ 185 73	QAVUV * 366 61	HAKUB ○ 164 132	APEL ♦ 330 24	SABAG ♥ 171 266
BUREP ♥ 168 452	WAGAP ♥ 195 253	ROLEK ♥ 252 171	MINEP ○ 375 11	NUVEX ♥ 195 328	BAZIX ○ 172 193	WUPIV ♥ 154 486	RORUL ♥ 203 595	MEDEN ♦ 174 98	NUZET * 299 75
DUSUP * 259 39	OPOD * 272 81	TUBOX * 333 67	CIGER ○ 192 58	GAZOR * 541 77	DABAG ♥ 212 304	OTAN ♦ 180 196	TUXUX ○ 221 60	CESER ♥ 272 262	GIRIX ♦ 213 47
ELAR ○ 134 433	KERUP ♦ 172 90	ULEB ♥ 171 411	PIRAD ♥ 191 324	JAXEL ○ 160 251	EDIB ♦ 183 44	KOLOL * 308 56	UKOP ○ 130 100	PULUD * 397 66	JUVAK ♦ 155 320

The Galactic Map

Orders in Block Caps please

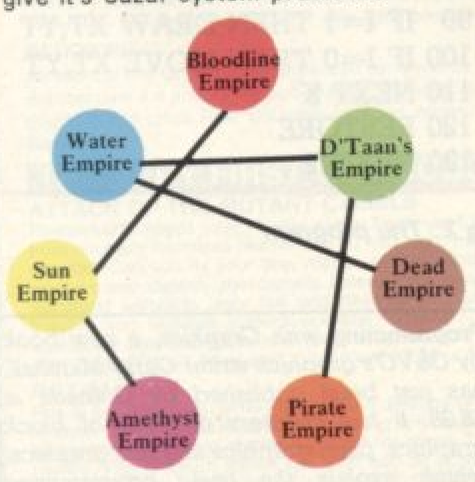
Name: ....

Code No: .... Telephone No: ....

	1st Movement phase		2nd Movement phase	
AT	ACTION	STAR	ACTION	STAR
FLEET 1				
FLEET 2				
FLEET 3				
FLEET 4				
FLEET 5				
FLEET 6				
FLEET 7				

I wish to move the .... Empire's Imperial Ship from .... to ....

Please notify us separately of any change of address.



The Diplomatic Diagram

GRAPHICS

By Garry Marshall

ESSENTIALS OF VIDEO GAMES

To be able to reproduce the movements of three-dimensional objects in a realistic fashion is essential to the success of many video games.

There are two essential parts to any program for doing this. They are, first, the production of a perspective view of the object and, second, the application of the rules for movement.

A solid object with straight edges can be described by giving points on its surface and the ways in which they are to be joined to form the edges of the object.

Once an object is described in this way, a perpective view of it can be drawn by applying the perspective transformation to each point that is used in the description and then joining the transformed points in the same way as the actual points are joined.

The rules for the movement of the points on the object can be expressed by giving the position of the point at any time, T, in terms of its initial position at T=O.

If the co-ordinates of the initial position are denoted by (X, Y, Z) and those of the current position by (XC, YC, ZC) then the rules for movement can be written, for example, as:

XC = X + T*Y
YC = Y
ZC = Z

The current position can be given in terms of the initial position by any set of equations with this form as long as when T=O the equations become:

XC = X
YC = Y
ZC = Z

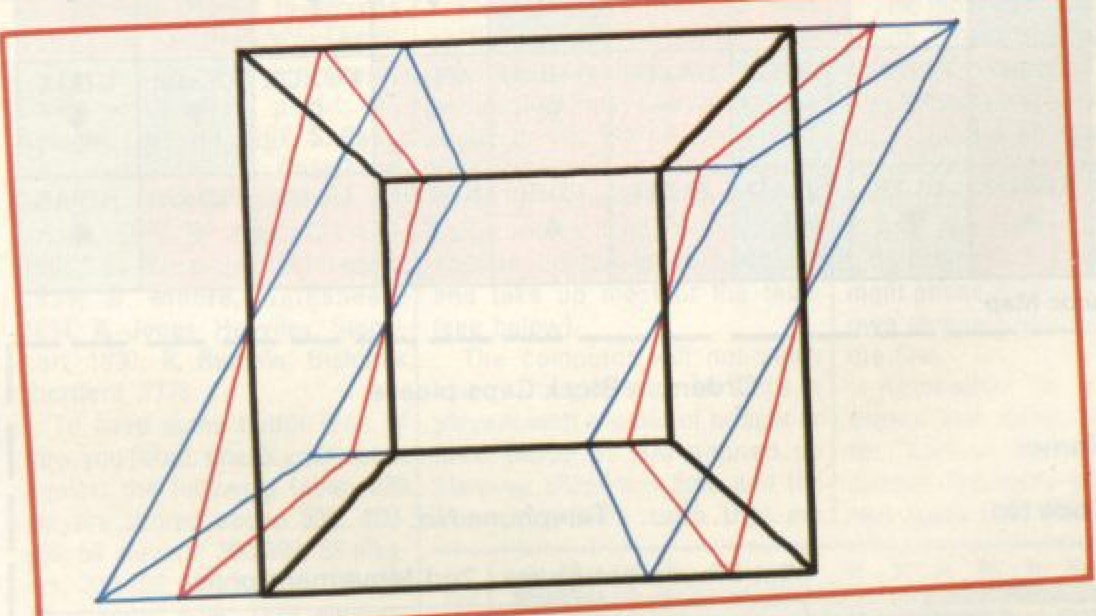
The form of a program for producing movement of three-dimensional objects can now be given. If the object itself is described by a number of groups of four items of data, X, Y, Z and I, in which X, Y and Z give the co-ordinates of a point and I indicates whether the point is joined to the previous one by an edge.

The indicator, I, takes the value 1 if there is an edge and is 0 if there is not. The form of the program is:

For each group of data items:
Read X, Y, Z and I
Apply movement rules to give XC, YC, ZC
Find transformed point corresponding to (XC,YC,ZC)
If I=1 then draw a line to this point
If I=0 then move to this point

A program based on this scheme which deals with an object described by N groups of data which is viewed from a distance D is shown in Fig 2.

The results that can be produced with this program when N and D are initialised and data are added are illustrated in Fig 1.


Fig 1: Here a cube is distorted using the rules given.

Once three-dimensional shapes can be created and put into movement, the ways in which they can be used in video games are almost endless.

Imagine a three-dimensional Pacman gobbling up everything around him. In a video game, this is nothing more than a shape that is showing a simple pattern of movements.

In the same way, three-dimensional Space Invaders can be created that can distort themselves so as to avoid missiles fired at them in ways other than moving bodily in one direction or another.

There is no reason why the shapes that are created should be confined to artificial ones such as those of a Pacman or a Space Invader.

Given the high resolutions that are available with most microcomputers, there is no reason why realistic three-dimensional human figures, for example, should not be created and made to move.

These could be superior to the figures that are seen in basketball and football video games at present.

A good deal of data is needed for the creation of such an image. However, once the data is assembled and stored the bulk of the work is done.

The data can be placed in data statements, but it is much simpler to share it between other programs if it is stored in a file.

When it is stored in this way, any number of programs can use it to create and manipulate the shape, thus spreading the work needed initially to create the file.

```
10 FOR T=0 TO 2
20 FOR K=1 TO N
30 READ X,Y,Z,I
40 XC=X + T*Y
50 YC=Y
60 ZC=Z
70 XT=XC/(1 + ZC/D)
80 YT=YC/(1 + ZC/D)
90 IF I=1 THEN DRAW XT,YT
100 IF I=0 THEN MOVE XT,YT
110 NEXT K
120 RESTORE
130 NEXT T
```

Fig 2: The program

Programming with Graphics, a new book by C&VG's graphics writer Garry Marshall, has just been published by Granada at £5.95. It has chapters on each of block graphics, pixel graphics and line graphics, which explain the basic programming techniques and gives many programming examples.

NEW FROM THE DESIGNER OF GRIDRUNNER

SO GOOD IT WILL BLOW YOUR MIND!!

SO FAST IT WILL BLOW YOU AWAY!!

- The BIGGEST ADVANCE in Video Games design since Defender hit the Arcades!
- Experience Laser Zone-an utterly NEW, TOTALLY ORIGINAL MASTERPIECE of Video Games Design!!
- Learn to control two spaceships at once. FEEL THE EXHILARATION as, after long hours of practise, you control the two ships so that they function as a SMOOTH, CO-OPERATIVE TEAM!!
- LASER ZONE. Quite simply the BEST VIC-20 Game in existence!!

LASER ZONE

- Feel the RAW POWER as you lunge for the Electro Button and BLAST your enemies into expanding clouds of SPACE JUNK!!
- Laser Zone requires a Joystick, 8 or 16k, and DEDICATION!!
- FEEL THE HUMILIATION as a carelessly -aimed BLAST SLAMS into the side of your last remaining ship!!
- Designed and Programmed by Jeff Minter for the VIC-20 with 8 or 16k Ram Pack. If you don't yet have the memory, LASER ZONE IS THE ONLY EXCUSE YOU NEED TO BUY IT!

£6.00

- A COMMODORE 64 version will be available soon.

Super Quality Software from * LLAMASOFT *

J = JOYSTICK CONTROL

VIC 20

ABDUCTOR J

A classic new space game! ZAP the swirling alien hordes before they ram you — and abduct your humanoids! Survive the assault for long enough and you'll get an extra stage on your spaceship- with double firepower! Awesome unexpanded Vic Action. **£6.00 + 50p P&P.**

GRIDRUNNER J

Finally, true arcade quality on the unexpanded VIC! Shoot down the segmented DROIDS invading the grid. Beware of the pods and zappers! The awsome speed, sound and graphics gives you the best blast available for unexpanded Vic. **£6.00 + 50p P&P.**

ANDES ATTACK (8K) J

Your spacecraft must attack the descending aliens and frustrate their evil intent. Fly your Ramjet fighter over the Andes mountain range and protect your llamas from kidnap by hostile UFOS. Features 5 kinds of UFO, controls include up, down, reverse, fire, thrust and smart bomb. Entirely in machine code. Requires 8K expansion and joystick. **£8.00 + 50p P&P.**

TRAXX M/C (8K + EXPANSION) J

This is VIC 20 cross breed between the now famed 'Packman' and the game 'Quix'. All in machine code, fast and fun with joystick controls, uses Hi-Res colour graphics. 8K or larger expansion needed. **Only £6.00 + 50p P&P complete with instructions.**

BLITZKRIEG

As seen at the Commodore show and reviewed by the Daily Telegraph. Fly your Vulcan Bomber over the enemy city and destroy the buildings. 25 levels of play, uses Hi-Res colour graphics and plays Rule Britannia between waves. **Only £4.95 complete with instructions.**

THE VERY FIRST COMMODORE 64 GAMES

ATTACK OF THE MUTANT CAMELS

Planet earth needs you! Hostile aliens have used genetic engineering to mutate camels from normally harmless beasts into 90 foot high, neutronium shielded, laser-spitting death camels!! Can you fly your tiny, manoeuvrable fighter over the mountainous landscape to weaken and destroy the camels before they invade the human stronghold! You must withstand withering laser fire and alien UFOs. Game action stretches over 10 screen lengths and features superb scrolling, scanner, 1/2 player actions and unbelievable animation! Play this game and you'll never be able to visit a zoo again without getting an itchy trigger finger! Awesome m/c action! **£8.50 + 50p P&P.**

ROX-64

Rox is a challenging game involving the defence of your lunar base from a deadly meteor shower. Rox-64 includes amazing sprite graphics displays and spacy sound effects, and an awesome 'mothership' display if you win the game. Top 10 scores are tabled along with their names. This program shows just what can be achieved using only Commodore-64 basic. Study the listing and learn how to use sprites and sound on this outstanding machine. **£4.95 + 50p P&P.**

GRIDRUNNER 64

The No. 1 best game for the Vic has been improved for your COMMODORE 64! Gridrunner is a smash hit in the USA. Now experience the lightning-fast challenge of the grid on the 64. Features 31 skill levels and excellent sound and graphics. Sore trigger finger *free* with every game! **£8.50 + 50p P&P.**

SPECTRUM

GRAPHICS CREATOR (16K)

Not just another character editor! Allows you to define not only the 21 user definable characters. Also allows you to change the entire 96 character ASCII set. Creates BYTES files ready for you to load into your own programs. Includes advanced Reflect, Invert, Field commands etc. Complete with full documentation. Bin the BIN statement and use Graphics Creator with its easy on-screen cursor editing. **£2.95 + 50p P&P.**

BOMBER (16K)

Yes, a full feature version of the popular game 'Blitz', supplied for the 16K or 48K Spectrum. **For only £2.95 + 50p P&P.**

HEADBANGER (48K) NEW

Colourful new game starring Chico the headbanger who you must guide to riches through an increasing shower of heavy metal. Gain bonuses for headbanging but be sure to take an aspirin when the pain gets too much! Basic + m/c to speed up action. Great graphics, nice animation. Will even drive William Stuart system's voice synthesiser to produce speech output. Can you attain the grade of 'Rocker Class One' or will you be "Barry Manilow Class 5"? Start headbanging to-day and find out. **£4.95.**

SUPERDEFLEX (48K)

Bounce 'Sid', the space invader, around the screen into the power pods, keeping away of course from the devil who chases you around the screen. Steer with your Deflex shields, but beware the mines or you may be buried alive! Superb graphics and fantastic sound on the 48K Spectrum only. **Only £4.95 on cassette + 50p P&P.**

ATARI 400-800

TURBOFLEX

Superb ultra-fast and totally new ball game. Uses ATARI's unique features to the full. Incorporates superb colour/sound effects and uses Player/Missile graphics. Tables top 10 scores along with Scorer's name. **£6.00 + 50p P&P.**

GRIDRUNNER NEW J

100% machine code version of the best selling VIC/COMMODORE 64 game. Runs on any ATARI (16-48K). Blinding speed and superb graphics. Experience ATARI quality without paying ATARI prices — GRIDRUNNER for ATARI is just £8.50. Supplied on autoboot cassette. Discover the fastest and most exhilarating blast-em-up game ever devised. **Only £8.50 + 50p P&P.**

ZX81

CENTIPEDE (16K)

the ORIGINAL game from the ORIGINAL author. This is the identical program to that being sold by other companies for three times our price. The game has received ecstatic reviews in the computing press. Program has 30 speed levels and ever increasing Centipede hordes. Tables top 10 scores and names. Why wait to pay more? **Only £1.95 + 50p P&P.**

LLAMASOFT SOFTWARE

Dept CV8,
49 Mount Pleasant,
Tadley, Hants
RG26 6BN.
Tel: 07356-4478
Trade enquiries welcome.

Please add 50p P&P with all orders

MACHINE CODE

YET MORE INSTRUCTIONS

We have already looked at *conditional jump instructions*, and now we turn to another set of instructions, which are often used in conjunction with these — called *comparison instructions*.

These comparison instructions subtract an operand from a register specified in the instruction. Only the flags are affected, the sign, zero, carry and overflow flags being changed according to the result of the subtraction.

On the Z80 the comparison instructions all work with the accumulator. The opcode mnemonic is CP, and the addressing modes we can use with this mnemonic include:

CP data: Compare the accumulator with the 8-bit data provided in the instruction.

CP register: Compare the accumulator with one of the registers A, B, C, D, E, H, L.

CP (HL): Compare the accumulator with the contents of the memory location whose address is in the register pair HL.

The 6502 and 6809 allow comparison with other registers as well as with the accumulator.

On the 6502 we have the mnemonics CMP for compare with accumulator, CPX for compare with X register, and CPY for compare with Y register. The addressing modes we can use with these mnemonics include:

CMP data: Compare the accumulator with the 8 bit data provided in the instruction.

CMP address: Compare the accumulator with the 8-bit contents of the 16-bit or 8-bit Zero Page address.

Similarly we have CPX data, CPX address, CPY data, and CPY address.

The 6809 has the mnemonics CMPA, CMPB, CMPD, CMPS, CMPU, CMPX, CMPY, for compare with A, B, D, S, U, X, Y registers.

The operand must be of the same length as the register specified in the mnemonic, so CMPA and CMPB take an 8-bit operand and the others take a 16-bit operand.

These compare instructions are available in immediate, extended, and other addressing modes. For example, we may have:

CMPA data: Compare A with the 8-bit data provided in the instruction
CMPX data: Compare X with the 16-bit data provided in the instruction
CMPB address: Compare B with 8-bit contents of address
CMPS address: Compare S with 16-bit contents of address and address+1



TRUE AND FALSE FLAGS

The effect of a comparison instruction on the zero flag is quite straightforward: the zero flag will become 1 (meaning true) if the numbers being compared are the same, and 0 (meaning false) if the numbers are different.

The effect on the other flags is more complicated, and to understand what happens we have to look at the details of twos complement arithmetic.

You will remember that the Z80, 6502 and 6809 treat binary numbers with a 1 in the leftmost position (bit 7 of an 8-bit number or bit 15 of a 16-bit number, starting the count from bit 0 on the right) as being negative.

We can negate a number by first calculating the ones complement (by changing 0s to 1s and 1s to 0s) and then adding 1 to get the twos complement.

For example, if we start with the binary number 00001010 (equal to decimal 10) the ones complement is 11110101 and the twos complement is 11110110.

If you perform the same process starting with 11110110 you will get 00001010 and if you add 00001010 and 11110110 you will get 00000000 (and a carry of 1), so it does make sense to regard the twos complement of a number as its negative.

The easiest way to perform a subtraction in binary (for people, if not for microprocessors) is to add the twos complement of the number to be subtracted.

For example, to calculate 00001000 — 00000111 (decimal 8 — 7) we first calculate the twos complement of 00000111, which is 11111001, and then calculate 00001000+11111001, which gives 00000001 (and a carry of 1).

The 6502 actually uses this method of subtraction internally, so the program fragments

```
SEC
LDA 8
SBC 7
and
LDA 8
CMP 7
```

would leave 1 in the carry flag.

PERFORMING SUBTRACTION

The Z80 and 6809, however, perform direct subtraction with borrow, giving a carry which is the opposite of the carry resulting from the twos complement and addition method. Thus the fragments

```
Z80
LD A,8
SUB 7
and
LD A,8
CP 7
6809
LDA 8
SUBA 7
and
LDA 8
CMPA 7
```

would leave 0 in the carry flag.

Subtraction of binary numbers using borrows (corresponding to the way we perform subtraction of decimal numbers) is complicated because of the difficulty of keeping track of the borrows, which may extend over several places.

It is much easier to perform a twos complement and addition, and if you are using a Z80 or 6809 remember to complement the resulting carry.

After an addition, subtraction, or comparison instruction, the sign flag will be the same as the leftmost bit of the result (bit 7 in an 8-bit operation, bit

BY TED BALL

15 in a 16 bit operation), 0 meaning positive and 1 meaning negative.

Thus, in the preceding example (8-7) the sign flag would become 0, while 7-8 would leave 1 in the sign flag.

Our microprocessors use a fixed number of bits in their calculations, but the results may require more bits than are available.

CARRYING THE FLAG

The carry flag is used to record the carry from the leftmost bit, and this is all we need in unsigned binary arithmetic (where we regard the 8-bits as representing numbers from 0 to 255 decimal).

However, in signed binary arithmetic the sign and carry flags are not enough to tell us whether or not the result has the correct sign. Consider the calculation of decimal 70+80 in signed binary:

```
   70      01000110
 + 80     +01010000
 ----     ---------
  150  (0)10010110   = -106 decimal
```

Adding two positive numbers has given a negative answer, because the carry from bit 6 has gone into the sign bit.

We get a similar result from (−70)+(−80)

```
  -70      10111010
 +-80     +10110000
 ----     ---------
 -150  (1)01101010   =+106 decimal
```

In this case adding two negative numbers have given a positive answer.

The same kind of thing can happen with subtraction, for example −70−80 (should be −150), and 80−(−70) (should be +150)

```
   -70            10111010
+twos complement
   of 80         +10110000
              ------------
              (1)01101010   =+106 decimal

    80            01010000
+twos complement
   of -70         01000110
              ------------
              (0)10010110   = -106 decimal
```

THE WRONG INDICATIONS

The overflow flag is used to indicate when the result of a signed binary calculation has the wrong sign because 8 or 16-bits is not enough to record the correct signed binary answer.

The overflow flag will become 1 when the result of an 8-bit addition, subtraction, or comparison is more than +127 decimal or less than −128 decimal, and 0 otherwise.

Similarly, a 16-bit operation will give an overflow of 1 if the result is more than +32767 or less than −32768, and an overflow of 0 otherwise.

The value of the overflow flag can be calculated from the carries from bits 6 and 7 in an 8-bit operation, or bits 14 and 15 in a 16-bit operation. The overflow will be 1 if the two carries are different and 0 if the two carries are the same.

We can now return to the use of the comparison and conditional jump instructions. In Basic the simplest conditional jumps have the form IF *condition* THEN GOTO *line number*, where *condition* is one of the relations M=N, M<>N, M<N, M>N, M<=N, M>=N.

TRANSLATING LANGUAGE

Now that we know how to work out what the flags will be for the various cases =, , , , =, =, we can translate these IF . . . THEN . . . statements into assembly language (but needing several lines to replace the single line of Basic)

There is no difficulty in testing for = and :

```
Z80     LD A,M          ; Code to handle <>case
        CP N
        JR Z,SAME
        ...             ; Code to handle<>case
        ...
SAME    ...             ; Code to handle = case
        ...

        LD A,M
        CP N
        JR NZ, DIFF
        ...             ; Code to handle = case
        ...
DIFF    ...             ; Code to handle<>case
        ...

6502    LDA M
        CMP N
        BEQ SAME
        ...; Code to handle <>case
        ...
SAME    ...             ; Code to handle = case
        ...

        LDA M
        CMP N
        BNE DIFF
        ...             ; Code to handle = case
        ...
DIFF    ...             ; Code to handle<>case
        ...

6809    LDA M
        CMPA N
        BEQ SAME
        ...             Code to handle<>case
        ...
SAME    ...             Code to handle = case
        ...
        LDA M
        CMPA N
        ...             Code to handle = case
        ...
DIFF    ... Code to handle<>case
        ...
```



SIMPLE TESTS FOR RELATIONS

The 6809 has an extensive set of conditional branch instructions, allowing us to make simple tests for all of the relations =,<>, <, >,<=,>=.

We have BEQ for =, BNE for <>, BLO or BCS for unsigned <, BLT for signed<, BHI for unsigned >, BGT for signed>, BLS for unsigned <=, BLE for signed <=, BHS or BCC for unsigned >=, BGE for signed >=.

With the more restricted conditional branches or jumps on the 6502 and Z80 some relations are difficult to test, but they can all be worked out if you understand the principles of binary arithmetic.

For example, consider the problem of testing for signed<.

If M<N we will get M−N<O (sign flag 1) when there is no overflow (overflow flag 0), and M−N>0 (sign flag 0) when there is overflow (overflow flag 1).

For this test we will therefore need to do something like:

```
6502                    LDA M
                        CMP N
                        BVC L1
                        BPL LESS
        NOTLESS         ...
                        ...
L1      BPL NOTLESS
        LESS            ...
                        ...

Z80                     LD A,M
                        CP N
                        JP PE, L1
                        JP P, LESS
        NOTLESS         ...
                        ...
        L1              JP P, NOTLESS
        LESS            ...
                        ...
```



The assault on your senses has begun with a great choice of games that have been created to give you a real challenge!

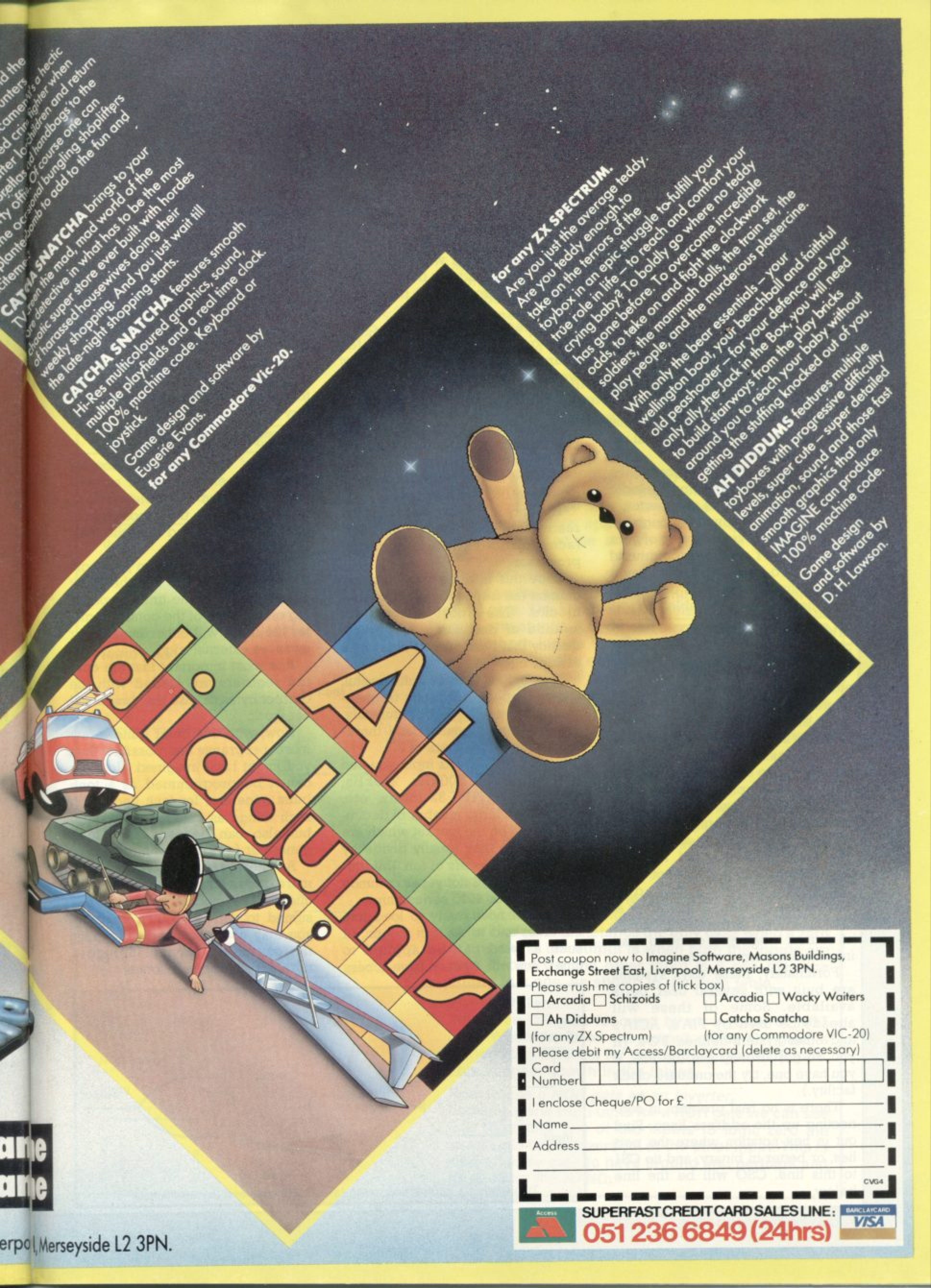
ARCADIA

SCHIZOIDS

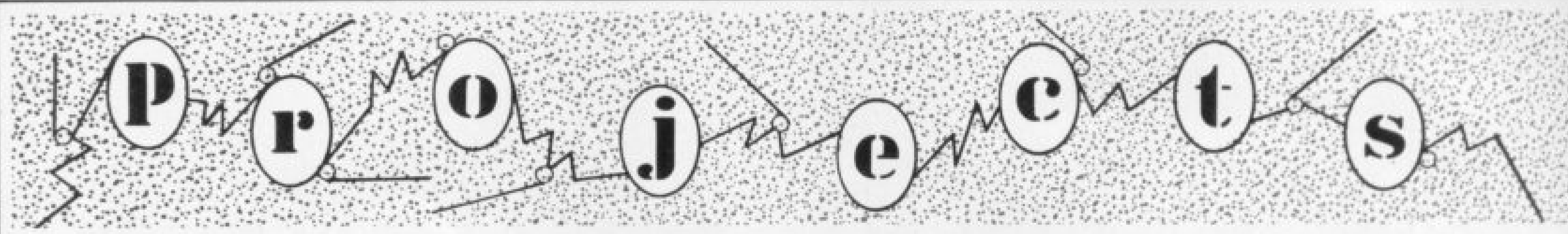




ZX SPECTRUM (16K or 48K)
100% machine code with 12 different alien types, incredible animation and explosive effects, sound and the fastest, smoothest hi-res graphics ever!
VIC-20 (any memory size)
100% machine code with eight different alien types, smooth hi-res multicolour graphics and animation, narrow playfield and sensational sound effects.
Keyboard or joystick.
Game design and software by D. H. Lawson.
for any ZX SPECTRUM.
It's my own fault, I even volunteered.
I thought that with the space-dozer and its shovel and skyhook it would be easy shifting the galaxy's rubbish.
Childs play. HUH! They warned me of the weird packaging, the trays, the rods, and all the rest.
But they didn't say I'd have to stop and control not just one but two or even more garbage pods. Then prod them, push them, toward that black hole, and oh, it's so very, very black, and so lonely, so empty.
Panic, mustn't panic, but they won't stop, twirling and spinning and turning, always turning, towards me, against me, at me And I'm alone.
No way out, nowhere to hide, on my own, my own ... own ...
SCHIZOIDS: NOT JUST A GAME BUT A STATE OF MIND.
SCHIZOIDS features real-time animated 3d graphics for a breathtaking visual experience, plus sound and all those arcade features you'd expect from IMAGINE.
Game design and Software by Peter Paranoid and the Yid Kids. (D.H.L.)
SCHIZOIDS
Wacky Waiters
the wildest, zaniest way of earning a fast buck. With crazy guests screaming for service you're gonna have to be quick to pick up the tips, don't slop the drinks, as you dodge the drunks and dart from elevator to elevator, coz if the Boss man spots you, your gonna be out on your butt. 100% machine code, incredible animation, super smooth hi-res multicolour graphics, authentic sound effects and special playfield.
Keyboard or joystick control.
Yet another high performance Arcade quality experience for any Commodore Vic-20.
Game design and software by Eugene Evans.
WACKY WAITERS



CATCHA SNATCHA brings to your
TV screen the mad, mad world of the
store detective in what has to be the most
chaotic super store ever built with hordes
of harassed housewives doing their
weekly shopping. And you just wait till
the late-night shopping starts.
CATCHA SNATCHA features smooth
Hi-Res multicoloured graphics, sound,
multiple playfields and a real time clock.
100% machine code. Keyboard or
joystick.
Game design and software by
Eugene Evans.
for any Commodore Vic-20.
for any ZX SPECTRUM.
Are you just the average teddy.
Are you teddy enough to
take on the terrors of the
toybox in an epic struggle to fulfill your
true role in life – to reach and comfort your
crying baby? To boldly go where no teddy
has gone before. To overcome incredible
odds, to take on and fight the clockwork
soldiers, the mammah dolls, the train set, the
play people, and the murderous plastercine.
With only the bear essentials – your
wellington boot, your beachball and faithful
old peashooter – for your defence and your
only ally the Jack in the Box, you will need
to build stairways from the play bricks
around you to reach your baby without
getting the stuffing knocked out of you.
AH DIDDUMS features multiple
toyboxes with progressive difficulty
levels, super cute – super detailed
animation, sound and those fast
smooth graphics that only
IMAGINE can produce.
100% machine code.
Game design
and software by
D. H. Lawson.
Ah diddums
Post coupon now to Imagine Software, Masons Buildings,
Exchange Street East, Liverpool, Merseyside L2 3PN.
Please rush me copies of (tick box)
☐ Arcadia ☐ Schizoids
☐ Ah Diddums
(for any ZX Spectrum)
☐ Arcadia ☐ Wacky Waiters
☐ Catcha Snatcha
(for any Commodore VIC-20)
Please debit my Access/Barclaycard (delete as necessary)
Card Number
I enclose Cheque/PO for £
Name
Address
CVG4
SUPERFAST CREDIT CARD SALES LINE:
051 236 6849 (24hrs)
Access
BARCLAYCARD VISA
Merseyside L2 3PN.



LOGIC CHIPS, PHASE CLOCKS

One of the main problems associated with some of the newer microprocessors is that they seldom have a phase 2 clock.

This is really of no problem to kit builders as it is a simple inversion of phase 1. It is quite possible that you will have in your system, either a line which is phase 2 or a spare gate on a logic chip.

It would be easy to suppose that this was a hex inverter but I will not assume that here.

In figure 1 I have indicated the way in which two popular logic chips can be used as an inverter.

If you are unfortunate enough not to have a spare gate on any of your logic chips I would recommend using a two-input nand gate, say a 7400 or similar, as this is one of the most useful chips available.

SMALL SYSTEMS

For those with small systems it will come as a surprise that it will be easier for you to install this timer. Of course, the chip must be accessed using the address lines.

If you already have 64k bytes of memory installed the question becomes, where do you put the timer? There is no simple answer to this.

The easiest way of course is to remove a 1k-byte of memory somewhere. That used to be an easy job, but since the coming of 16k-by-1 and 64k-by-1 chips this is not so.

I would therefore risk dual addressing of memory and timer at the same time. The problem comes, of course, when you come to read information from the timer.

Fortunately, these days systems are built with several user ports available. Some of these will already be used by PIA's, ACIA's and other system-defined I/O's. (If you do not already use the PIA, if you have one, try the onboard clock facility.)

There is no real problem in connecting up the address lines. Find out in hex notation where the port lies, or better in binary, and tie CS1 to this line. CSO will be the line below.

For example, say the port is at 8010 hex, or 1 followed by 15 zeros in binary. Therefore you would put CS1 to line 15 and CSO to line 14.

This ties in with what I said last month, that to address the chip CSO must be at zero and CS1 must be at one.

The register select lines could then go on any of the first ten address lines. If, for example they were put on lines 0-2 the addresses in hex would be from 8010 to 8017 or in decimal 32,784 to 32,791.

Now, with the data, address and clock lines connected you are almost ready to start timing. It is not necessary at this point to connect either the IRQ or reset line.

The only necessary one left is the read/write line, again, this interfaces directly with the microprocessor.

Once this is done you must decide on the frequency of your timer clocks. The most convenient method of deriving a lower frequency that I have found is to use a divider chip.

The CMOS 4040 is quite useful, allowing up to 12 different frequencies to be selected. Unfortunately, this is a binary counter and therefore divides in powers of 2.

Hence, for a 1MHz input you can get outputs of 500kHz, 250kHz, 125kHz, 62·5kHz, 32·15kHz, etc. There are a large number of decimal dividers on the market which are as handy as they usually divide by multiples or powers of ten. Unfortunately, these are not yet as common as the 7400 or 4000 series chips.

You are now ready to load into the timer and to set it in motion, (if such a word can be applied to time). You will, by now, have access to eight internal registers. I will refer to them as RO-R7.

Each timer — remember there are three — has its own control register, data latch, and buffer register.

The first, the control register lets you decide in which mode that particular timer is in. Unfortunately there is not enough room here to explain all the modes suffice to say that there is a lot of supplied information with the chip when you buy it.

LOTS OF EIGHT

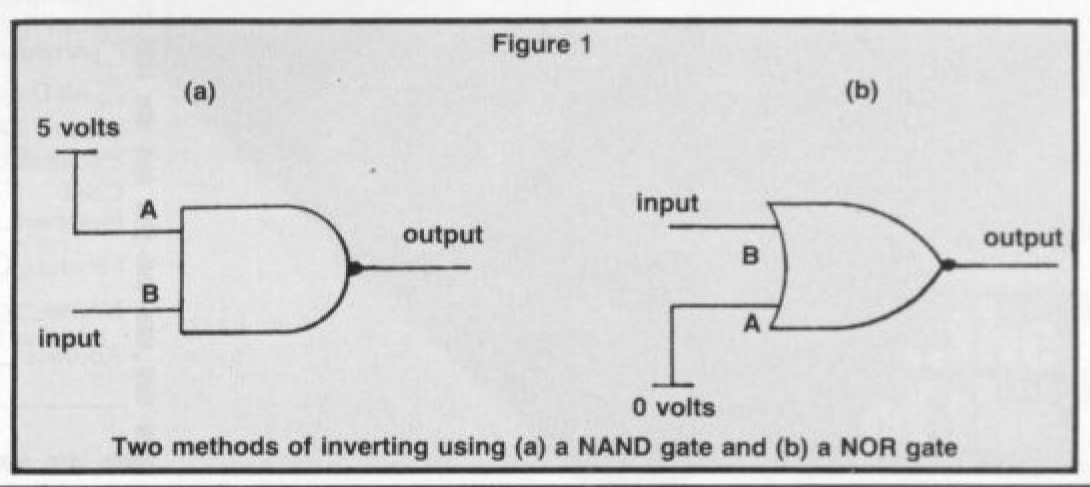
To load 16-bits into the counter two lots of eight must be entered separately. For example, to load into timer 1 write the 8 most significant bits into R2 and then the least significant bits to R3.

This second instruction puts both the MSB and the LSB into the 16-bit counter at the same time. Depending on the state of the control register the timer will either initialise or await an external trigger.

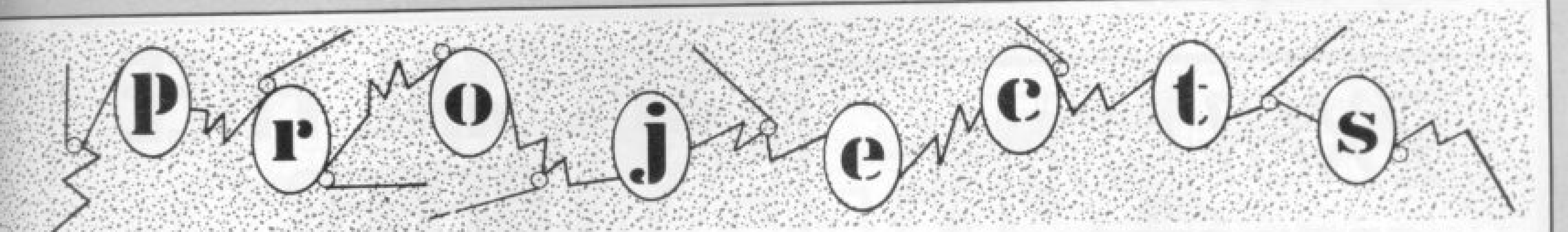
It is most important that the control registers are loaded with the correct bytes or else the timers will not work.

Now, with this timer quite a few more programs are possible than you might have imagined. Not only can it be programmed as a tone burst generator for fault finding on such things as cassette recorders, but also can be used as a tone generator for synthesising music.

As there are three timer many more contrived sounds may be produced. The module has been designed to drive two TTL loads so you may not even need to amplify the output for playing through a normal pair of headphones.



Two methods of inverting using (a) a NAND gate and (b) a NOR gate



Truth Tables

NOT gate.

Symbol

Input	Output
0	1
1	0

AND gate.

Symbol

Input A B	Output
0 0	0
0 1	0
1 0	0
1 1	1

NAND gate.

Symbol

Input A B	Output
0 0	1
0 1	1
1 0	1
1 1	0

OR gate.

Symbol

Input A B	Output
0 0	0
0 1	1
1 0	1
1 1	1

NOR gate.

Symbol

Input A B	Output
0 0	1
0 1	0
1 0	0
1 1	0

A LITTLE ON DIGITAL LOGIC

Some of you may have come across truth tables for logic gates or you may have played about with some small chips at some time or another.

In the figure below I have shown a few of the symbols which are used to represent the gates I have mentioned. There is not enough room here to cover the whole subject of digital logic so I will not try. All that I will show is a small section relevant to the project.

Above I have mentioned an inverter, a nand gate and a ripple counter, the 4040. The 4040 is too complex to mention here. The other two I will describe to you.

The Inverter or NOT Gate.

This is a one input, one output gate, of which a number are built into a single chip. It takes a logic level and inverts it. If a logic one appears on the input logic zero appears at the output and vice versa. This can be shown in the form of a truth table.

The AND Gate.

To describe a NAND gate we must first consider the AND gate. The simplest AND gate has two inputs but only one output. As you can see, for the output to be a one both inputs must be at logic one. Any other condition and the output is a logic zero.

The NAND Gate

Imagine an AND gate followed immediately by an inverter. This is the NAND gate. Whatever appears at the output of the AND gate is inverted as is shown in the diagram.

How to use a NAND gate as an inverter.

By taking one input of the NAND gate to the 5 volt rail so as to make it a logic one you will see that the output follows that of the NOT gate. We therefore have a NOT gate from a NAND gate, and this is why the NAND gate is so useful.

The OR Gate.

This is a logic gate in the same form as the AND. It usually comes in a chip package along with others of its kind. In this instance the only case when a zero is present at the output is when both the inputs are zero. If one OR the other input is a one then the output is a one, as shown in the truth table.

The NOR Gate.

This is an OR gate followed by an inverter or NOT gate. Whatever is on the output of the OR gate is immediately inverted for the output of the NOR gate. This is again shown in the tables.

How to use a NOR gate as an inverter.

Looking at the truth table for a NOR gate we can see that by taking one of the inputs to logic zero the output will be an inversion of the other input. This is also a handy gate to have around and perhaps just as good as the NAND.



CINDERELLA AND THE BEANSTALK

Every now and again in an Adventure something dramatic must happen — or it wouldn't be an Adventure!

This may be the appearance of a cryptic clue to heighten the excitement and add to the atmosphere, or the transformation in some way of an object or location.

A verb routine cannot usually achieve this end, as some of these events will be unique. For example, the transformation of mice and pumpkin into Cinderella's coach and horses will be carried out magically by the fairy godmother as soon as all necessary conditions have been met.

This involves the mice, pumpkin, godmother and player all being in Cinderella's house at the same time.

Similarly, if there is a secret exit from the drawing room of a house via a moving bookcase, you might wish to draw attention to it occasionally by giving the clue "There's a draught coming from under the bookcase".

With a clue like that, you can make the mechanism for opening the exit quite complex, as the player will be fairly certain it is worth persevering.

Recapping on our method of screen display, we settled for setting variable Q1$ for the computer's reply to the move, return to the start of the main game loop (Block 3 we called it) at line 100.

This block checks for special conditions before the screen is cleared and redisplayed. It is these special conditions we have now got to insert.

Let's tackle the clue first. We are at the top of the beanstalk we grew so painstakingly a few months ago, and wish to display "FEE-FI-FO-FUM" whilst in this location.

The "GO" or moving verb routine cannot be used, since then the message would only appear on entry to the location.

If we spend some time there it will not re-appear. Letting the top of beanstalk be location five (i.e. LN%=5 when there) then we can insert line 110:

```
110 IF LN%=5 THEN LET Q2$="FEE-FI-FO-FUM".
```

Now when the computer has worked out the response to the latest command, it will automatically set Q2$ to the required message if the current location is set at five.

The display lines will now look like this:

```
190 PRINT "YOU TOLD ME TO"; R1$ : IF LEN(Q1$)>0
THEN PRINT Q1$ : IF LEN(Q2$)>0
THEN PRINT Q2$
```

Thus Q2$ will only get printed if set. Remember that these variables must be nulled (ie LET Q1$=" ") after display.

A further refinement is possible to cause the message to occur at random, keeping the player guessing whether or not the giant is about to attack, rather than risking him deciding that the message is automatic.

```
110 IF LN%=5 AND RND(3)=2 THEN LET Q2$="FEE-FI-FO-FUM"
```

This will bring the message up about one turn in three. Next we will see how to carry out transformations that take the game into a new phase.

I sat with eager anticipation as Philosopher's Quest loaded into the BBC Model B micro in front of me. The Acornsoft logo appeared across the screen in four colours, broken by the title of the game, whilst the blocks loaded before my eyes in hex.

When the game started I was treated to silent scrolling text in black and white. OK, so an Adventure doesn't require colour or sound, but it seemed a shame not to take some advantage of the Beeb's facilities — the machine wasn't being used to the full.

Having got that off my chest, what of the Adventure itself? It starts off in a shop that has peculiar qualities.

Nothing has to be paid for, but you can only leave with two items. If the four objects lying around, keys, in my experience, were a must. So that left a choice between an aqualung, steel rod, and cup of tea that couldn't be drunk (said so in the rules).

I opted for the rod, and set off, only to find myself in pitch darkness.

Now newcomers to Adventures might be thrown off balance by having had no chance to acquire a lamp. Not so those of us who have traversed the ancient pyramids, been stuck in quicksand bogs, mauled by bears, and gone insane trying to escape from the Asylum. "XXXX XXXX", I boldly typed, and I was duly rewarded!

Thereafter I proceeded to explore the labyrinth, which has many puzzles to solve. Unfortunately, in attempting to solve them I was frequently thwarted by being turned into a lettuce, ceasing to exist, and various other nasty things.

However, restarting was not too difficult since it was only necessary to reload the database part of the program — a task taking about a minute.

Thus, eventually I got an Albatross (no wafers!), some ripe cheese, and many times wore out the seat of my trousers on the slides.

I've heard of but not come across the automatic solicitor, nor recovered from ceasing to exist. I am told it is possible to do this, and the key is philosophical.

Those people I know who are into the game just give me a distant smile when I ask how near they are to completing it. Presumably their minds are miles away, philosophising!

Good points — cunning and complex plot. Bad point — poor response time, up to about five seconds when the machine does any serious thinking.

Scott Adams' first adventure was my introduction to Adventure gaming, and although it fired my imagination, little did I realise it was going to make Adventure a major part of my life!

The original version was written in Basic for the TRS-80 and Pet, and later translated into machine code, available for the TRS-80, Apple and Sorceror.

Like all Scott's Adventures, it has recently been released for the Vic-20 and Atari computers. This may explain why I am currently receiving a flurry of pleading letters from readers who are desperately stuck — a whole new generation of Adventurers!

It is probably *the original* adventure as far as micros go. I regard it as a classic, and still relive the thrill I first experienced whenever I bring it up on the screen.

The major problem in this game seems to be how to get past the thin bear. If you've got that far you're capable of completing the journey!

What do bears to to people? OK — reverse roles, and then (disappointingly) rephrase it!

To those currently playing Adventureland — don't give up. It IS soluble.

If you are struggling, get together with others in the same position — Adventures are fun when played in company.

BY KEITH CAMPBELL



WARPATH

Bigscreen will help you to map out a wargame which goes beyond the borders of your screen. Part four of Ron Potkin's wild west game

DURING the past three articles, I have described a number of important arrays: BIGSCREEN, IBOARD and PTABLE.

After studying last month's explanation, I think that you will now understand the basic module and be able to see how the arrays fit together. They are very large, totalling almost 6000 bytes which is a big slice out of a 16K memory.

The largest of these is BIGSCREEN which requires 4000 and although this might appear wasteful, it provides considerable flexibility and is easy to operate. It enables me to draw any map feature and save it permanently in memory so that, during the course of the game, the program is able to recall any portion of the map and display it in the WINDOW.

This method is only viable with low resolution graphics; high resolution would require a BIGSCREEN of not 4000 but 20000 or more! In this case, the alternative is to write a machine language routine which reads the contents of IBOARD, selects the appropriate feature from a character set and prints it on the screen.

I am going to concentrate on a single routine. The Basic listing is quite short but is an integral part.

It is clear from the rules that the program must check a hex and its neighbours at every move. The hex that a player wishes to move to must be checked first. This can be done in Basic, but checking the six surrounding hex is slow and this is carried out in machine code. This routine is called SEARCH and is held in X$(4).

Take another look at IBOARD and BIGSCREEN. Hex are awkward to deal with and you can see the problem from the following extracts from the arrays.

This diagram shows two small parts of BIGSCREEN showing a piece on an odd row X264X and a piece on an even row X396. The six surrounding hex are shown in brackets.

BIGSCREEN

ODD

0		(8)		16
	(132)		(140)	
256		x264x		272
	(388)		(396)	
512		(520)		528

EVEN

	132		(140)	
256		(264)		(272)
	388		x396x	
512		(520)		(528)
	644		(652)	

Now compare these with the equivalent positions on IBOARD:

ODD			EVEN		
0	(1)	2	24	(25)	26
(24)	(25)	26	48	(49)	(50)
48	x49x	50	72	x73x	74
(72)	(73)	74	96	(97)	(98)
96	(97)	98	120	(121)	122

Let's assume the man on x49x is to be moved in direction 1. What hex number do I test? It must be 25 which is 24 less than 49, but what if the man is on x73x? Then direction 1 gives 50 which is 23 less. You can see that the offsets for the two are different and depend on whether the row is even or odd i.e.:

Direction	1	2	3	4	5	6
Odd Row	−24	24	48	23	−25	−48
Even Row	−23	25	48	24	−24	−48

Now perhaps you will forgive me for sneaking in Line 1180! This table is in a 2 by 6 array (variable RF) and also in memory starting at RW (location 32606).

RF is used in Line 500 when testing whether the new hex is empty. Take a look at this line. Can you see how NB, the new hex position is calculated? The routine also returns NX, the contents of the hex and V2, its location in memory.

RW is used by SEARCH. This is the same thing, but we do it six times. We first POKE 6 into S9 and BL is passed to the USR routine. The route will not return until it finds a non-vacant hex, when it returns the contents. These are checked and then, if necessary, X$(4) is recalled. When it has completed the search, it returns with S9 equal to 255.

The interesting feature is the use of S9. The routine is really equivalent to FOR S9 = 6 to 1 STEP −1, but I cannot put this into the USR routine because each time it was entered S9 would be set equal to 6.

The answer is to set S9 to 6 in Basic and let the machine code decrement it. This is in the listing below which is annotated so that with the above explanation, I think you will find it understandable.

The Basic listing this month includes the lines necessary to load the machine code for X$(4). Once this is done, we will be able to start on the MOVE routine. Up to now, everything I have described can be used in any wargame — even hexagonal chess — but from now on we will concentrate on the details of Warpath and get the game underway.

The pieces move in the following manner:,

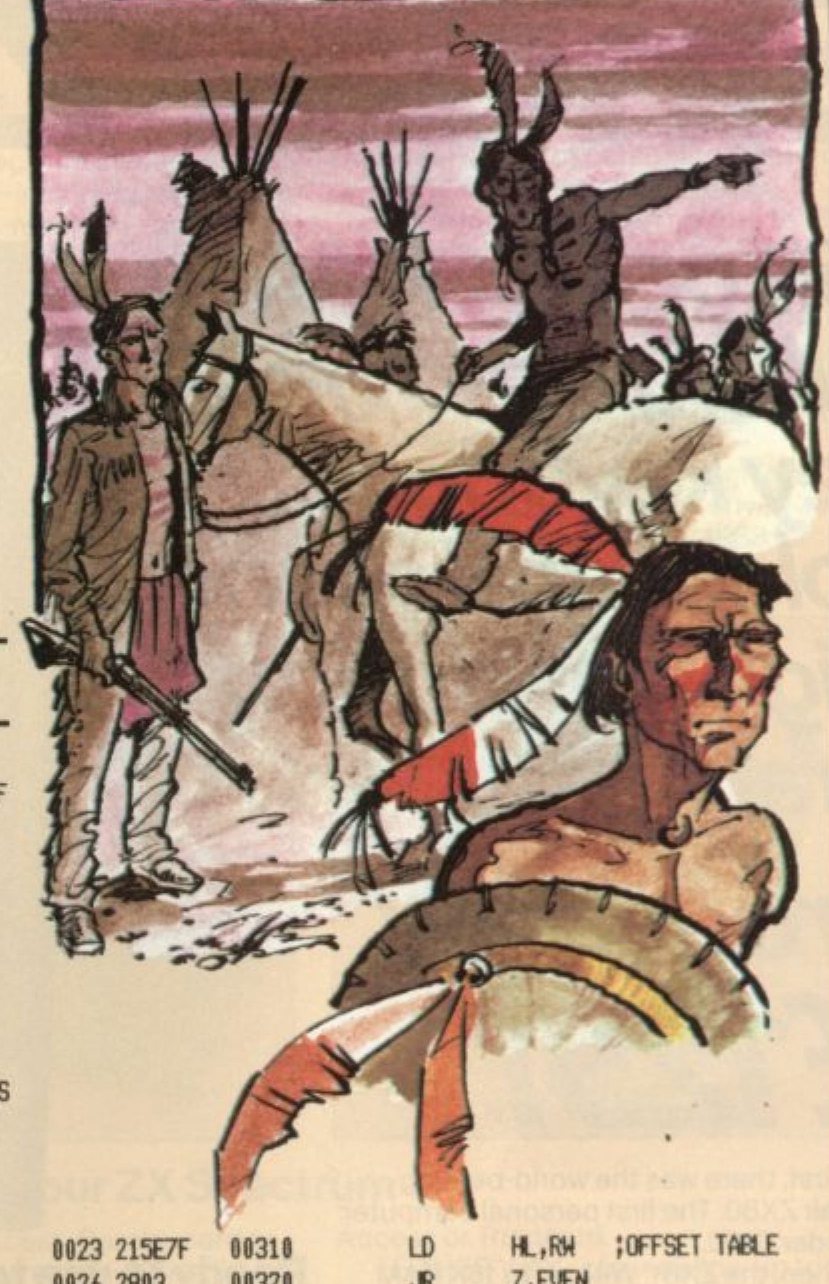
Each piece will flicker in turn with the number of moves available. To move a piece, type a number from 1 to 6. You can remember the directions by visualising a six-hour clock.

To move northeast — Press 1

To move southeast — Press 2

To move south — Press 3 and so on.

You may continue moving in this manner until all moves are expended, but if you move next to an opponent, the piece (unless it is a Tomahawk) will flicker with "xxx" and you must stop. Neither player may enter a hex containing another piece, a boulder or any wall of the garrison.



WARPATH Part 4 — SEARCH

```
500 NB=BL+RF(X,1+(INT(BL/24)AND1)):V2=BD+NB:NX=PEEK(V2):RETURN
1570 X$(4)="AAAAAAAAABBBBBBBBBBCCCCCCCCCCDDDDDDDDDDEEEEEEEEEEEFF
FFFFFFFFGGGGGGGGGHHHH"
3030 DATA CD,7F,0A,E5,21,5D,7F,7E,3D,77,FE,FF,28,38,06,01
3031 DATA 05,4E,E1,E5,16,01,15,1E,18,AF,ED,52,38,03,3C,18
3032 DATA F9,E6,01,21,5E,7F,28,03,1E,06,19,09,06,01,05,4E
3033 DATA CB,79,28,02,06,FF,E1,E5,09,11,B5,7B,19,7E,26,01
3034 DATA 25,6F,E6,7F,28,BE,C1,C3,9A,0A,XX
4000 LN$="..232 33 57 74"
4005 CS$="....21547 3810 5377 6839"
4020 K=0:FORI=1TO4:J=VAL(MID$(LN$,3*I,3)):IFJ<>LEN(X$(I))THENGOS
UB4040:NEXTELSENEXT
5000 FORI=1TO4
```

```
0000            00010          ORG     0       ;X$(4) ROUTINE
                00020 ;SEARCH THE HEX SURROUNDING BL
                00021 ;STARTING AT POSITION IN S9.
                00030 ;RETURN TO BASIC IF HEX IS OCCUPIED,
                00031 ;WITH CONTENTS OF HEX.
                00040 ;ELSE RETURN ON COMPLETION WITH
                00050 ;S9=255.
7F5D            00060 S9       EQU     32605D  ;HEX COUNT
7F5E            00070 RW       EQU     32606D  ;TABLE OF OFFSETS
7BB5            00080 BD       EQU     31669D  ;START OF IBOARD
0000 CD7F0A     00090          CALL    0A7FH   ;GET BL
0003 E5         00100          PUSH    HL      ;SAVE IT
0004 215D7F     00110 AGAIN    LD      HL,S9
0007 7E         00120          LD      A,(HL)  ;GET COUNT
0008 3D         00130          DEC     A       ;& REDUCE IT.
0009 77         00140          LD      (HL),A  ;PUT BACK
000A FEFF       00150          CP      255D    ;DONE?
000C 2838       00160          JR      Z,DONE
000E 0601       00170          LD      B,1     ;REMEMBER!
0010 05         00180          DEC     B       ;AVOID ZEROES
0011 4E         00190          LD      C,(HL)  ;S9
0012 E1         00200          POP     HL      ;BL
0013 E5         00210          PUSH    HL
0014 1601       00220          LD      D,1
0016 15         00230          DEC     D
0017 1E18       00240          LD      E,24D
0019 AF         00250          XOR     A
001A ED52       00260 SUBT     SBC     HL,DE   ;DIV BY 24
001C 3803       00270          JR      C,ROW
001E 3C         00280          INC     A
001F 18F9       00290          JR      SUBT
0021 E601       00300 ROW      AND     1       ;IS ROW ODD?
0023 215E7F     00310          LD      HL,RW   ;OFFSET TABLE
0026 2803       00320          JR      Z,EVEN
0028 1E06       00330          LD      E,6     ;ADD 6 TO TABLE
002A 19         00340          ADD     HL,DE
002B 09         00350 EVEN     ADD     HL,BC
002C 0601       00360          LD      B,1
002E 05         00370          DEC     B
002F 4E         00380          LD      C,(HL)  ;GET OFFSET
0030 CB79       00390          BIT     07H,C   ;NEG OFFSET?
0032 2802       00400          JR      Z,POS
0034 06FF       00410          LD      B,255D  ;NEGATE BC
0036 E1         00420 POS      POP     HL
0037 E5         00430          PUSH    HL      ;GET BL
0038 09         00440          ADD     HL,BC   ;HEX ADDRESS
0039 11B57B     00450          LD      DE,BD
003C 19         00460          ADD     HL,DE
003D 7E         00470          LD      A,(HL)  ;GET CONTENTS
003E 2601       00480          LD      H,1
0040 25         00490          DEC     H
0041 6F         00500          LD      L,A     ;PUT IN HL
0042 E67F       00510          AND     127D    ;EMPTY?
0044 28BE       00520          JR      Z,AGAIN ;NO -NEXT S9
0046 C1         00530 DONE     POP     BC
0047 C39A0A     00540          JP      0A9AH   ;BACK TO BASIC
0000            00550          END
00000 TOTAL ERRORS
33907  TEXT AREA BYTES LEFT
```

WARPATH

to be continued next month

Sinclair ZX Spectr

16K or 48K RAM... full-size moving-key keyboard... colour and sound... high-resolution graphics...

From only £125!



First, there was the world-beating Sinclair ZX80. The first personal computer for under £100.

Then, the ZX81. With up to 16K RAM available, and the ZX Printer. Giving more power and more flexibility. Together, they've sold over 500,000 so far, to make Sinclair world leaders in personal computing. And the ZX81 remains the ideal low-cost introduction to computing.

Now there's the ZX Spectrum! With up to 48K of RAM. A full-size moving-key keyboard. Vivid colour and sound. High-resolution graphics. And a low price that's unrivalled.

Professional power– personal computer price!

The ZX Spectrum incorporates all the proven features of the ZX81. But its new 16K BASIC ROM dramatically increases your computing power.

You have access to a range of 8 colours for foreground, background and border, together with a sound generator and high-resolution graphics.

You have the facility to support separate data files.

You have a choice of storage capacities (governed by the amount of RAM). 16K of RAM (which you can uprate later to 48K of RAM) or a massive 48K of RAM.

Yet the price of the Spectrum 16K is an amazing £125! Even the popular 48K version costs only £175!

You may decide to begin with the 16K version. If so, you can still return it later for an upgrade. The cost? Around £60.

Ready to use today, easy to expand tomorrow

Your ZX Spectrum comes with a mains adaptor and all the necessary leads to connect to most cassette recorders and TVs (colour or black and white).

Employing Sinclair BASIC (now used in over 500,000 computers worldwide) the ZX Spectrum comes complete with two manuals which together represent a detailed course in BASIC programming. Whether you're a beginner or a competent programmer, you'll find them both of immense help. Depending on your computer experience, you'll quickly be moving into the colourful world of ZX Spectrum professional-level computing.

There's no need to stop there. The ZX Printer – available now – is fully compatible with the ZX Spectrum. And later this year there will be Microdrives for massive amounts of extra on-line storage, plus an RS232 / network interface board.



Key features of the Sinclair ZX Spectrum

- Full colour – 8 colours each for foreground, background and border, plus flashing and brightness-intensity control.
- Sound – BEEP command with variable pitch and duration.
- Massive RAM – 16K or 48K.
- Full-size moving-key keyboard – all keys at normal typewriter pitch, with repeat facility on each key.
- High-resolution – 256 dots horizontally x 192 vertically, each individually addressable for true high-resolution graphics.
- ASCII character set – with upper- and lower-case characters.
- Teletext-compatible – user software can generate 40 characters per line or other settings.
- High speed LOAD & SAVE – 16K in 100 seconds via cassette, with VERIFY & MERGE for programs and separate data files.
- Sinclair 16K extended BASIC – incorporating unique 'one-touch' keyword entry, syntax check, and report codes.

rum



ZX Spectrum software on cassettes – available now

The Spectrum software library is growing every day. Subjects include games, education, and business/household management. Flight Simulation...Chess...Planetoids...History...Inventions...VU-CALC...VU-3D...Club Record Controller...there is something for everyone. And they all make full use of the Spectrum's colour, sound, and graphics capabilities. You'll receive a detailed catalogue with your Spectrum.

ZX Expansion Module

This module incorporates the three functions of Microdrive controller, local area network, and RS232 interface. Connect it to your Spectrum and you can control up to eight Microdrives, communicate with other computers, and drive a wide range of printers.

The potential is enormous, and the module will be available in the early part of 1983 for around £30.

sinclair

**Sinclair Research Ltd, Stanhope Road, Camberley, Surrey GU15 3PS.
Tel: Camberley (0276) 685311.**

The ZX Printer – available now

Designed exclusively for use with the Sinclair ZX range of computers, the printer offers ZX Spectrum owners the full ASCII character set – including lower-case characters and high-resolution graphics.

A special feature is COPY which prints out exactly what is on the whole TV screen without the need for further instructions. Printing speed is 50 characters per second, with 32 characters per line and 9 lines per vertical inch.

The ZX Printer connects to the rear of your ZX Spectrum. A roll of paper (65ft long and 4in wide) is supplied, along with full instructions. Further supplies of paper are available in packs of five rolls.



The ZX Microdrive – coming soon

The new Microdrives, designed especially for the ZX Spectrum, are set to change the face of personal computing by providing mass on-line storage.

Each Microdrive can hold up to 100K bytes using a single interchangeable storage medium.

The transfer rate is 16K bytes per second, with an average access time of 3.5 seconds. And you'll be able to connect up to 8 Microdrives to your Spectrum via the ZX Expansion Module.

A remarkable breakthrough at a remarkable price. The Microdrives will be available in the early part of 1983 for around £50.



How to order your ZX Spectrum

BY PHONE – Access, Barclaycard or Trustcard holders can call 01-200 0200 for personal attention 24 hours a day, every day. BY FREEPOST – use the no-stamp needed coupon below. You can pay by cheque, postal order, Barclaycard, Access or Trustcard.

EITHER WAY – please allow up to 28 days for delivery. And there's a 14-day money-back option, of course. We want you to be satisfied beyond doubt – and we have no doubt that you will be.

To: Sinclair Research, FREEPOST, Camberley, Surrey, GUI5 3BR. **Order**

Qty	Item	Code	Item Price £	Total £
	Sinclair ZX Spectrum – 16K RAM version	100	125.00	
	Sinclair ZX Spectrum – 48K RAM version	101	175.00	
	Sinclair ZX Printer	27	59.95	
	Printer paper (pack of 5 rolls)	16	11.95	
	Postage and packing: orders under £100	28	2.95	
	orders over £100	29	4.95	
			Total £	

Please tick if you require a VAT receipt ☐

*I enclose a cheque/postal order payable to Sinclair Research Ltd for £

*Please charge to my Access/Barclaycard/Trustcard account no.

*Please delete/complete as applicable

Signature

PLEASE PRINT

Name: Mr/Mrs/Miss

Address

CVG 904

FREEPOST – no stamp needed. Prices apply to UK only. Export prices on application.

LET'S SAVE THOSE HOSTAGES!

CHOPLIFTER

Remember the American hostage affair in which the staff at the Embassy in Iran were kept hostage by the fanatical student supporters of Khomeini? Then there was President Carter's abortive attempt to rescue the hostages with a commando style raid with choppers flying in low across the desert.

Some of the features of that attempted rescue have been incorporated in this latest game for the Vic 20, called Choplifter.

Choplifter is already a best selling game in the U.S., where versions for the Apple and Atari have been on sale for several months. It is not only the game's obvious associations with the hostage affair that have caused the game to be such a big hit in the U.S. It is by any standards a most playable game.

You pilot a helicopter on a mission to desert and they will shoot down the hostages rather than let you get away with them.

There are also enemy jet fighters and deadly satellites which home in on you at great speed.

The chopper is controlled with the joystick and can be made to bank, dive, hover, and scroll backwards and forwards. You can bomb as well as shoot.

The bombs can be directed to a certain extent by making the chopper bank in the direction you want the bombs to fall. By practising you can catch out those annoying tanks by guiding a bomb onto them instead of being a flying "sitting duck"!



Illustrations: John Davis

rescue the hostages that are waving at you from the ground. Land your craft and let them hop aboard. When you have picked up your maximum load of sixteen men, or as many as you can get away with, fly them back to the U.S. base and set off on another rescue mission.

But there are obstacles to your rescue attempt. Tanks appear to blast your helicopter once it lands. The best tactic is to take off and bomb the tank before returning for the frantic hostages.

Some of the hostages are imprisoned in camps so you will have to bomb these open in order to get at them.

We found an easier way to free the imprisoned hostages is to land the chopper on top of the prison and then take off again. The happy hostages soon come hopping out!

Your task is again made more difficult by those enemy tanks which are patrolling the

The movement of the rotor-blades has also been well done with convincing sound effects. And when you get blasted by a tank or passing jet there's a horrible metallic crashing sound.

Four readouts keep a check on the number of hostages on board, the number safely brought back to base, and the number killed. The high score is also recorded.

As might be expected the graphics on this version are not quite up to the standard of the Apple and Atari versions — though they are none the less impressive, and the game is every bit as playable as the other versions.

Very addictive and definitely one of the best games now on sale for the Vic. Choplifter is available at £24.95 from Audiogenic of Reading.

- **Getting started** 8
- **Value** 8
- **Playability** 9

DRIVEN BATTY IN THE TUBE TRAIN TUNNEL!

3D TUNNEL



Some of the most impressive graphics you are likely to see on the Spectrum can be found in 3D Tunnel.

Bats fly towards you flapping their wings, toads that bounce up and down as they approach, and sinister looking rats which charge at you, snouts to the ground and wagging their tails.

There are also ugly black spiders that swing along the roof of the tunnel spinning their webs as they approach.

48K Spectrum owners have an extra treat at the very end of the tunnel, if they manage to get that far. A silver underground train hurtles out of the dark recesses.

The underground train is a masterpiece of programming. You can see the lights twinkling as it approaches. When it becomes larger you can even see the passengers in their seats and hear the rush of wind as the train passes.

My chief criticism of 3D Tunnel is that the games playability does not measure up to the high standards set with the graphics.

Although the sensation of depth is adequately created with an infinite number of concentric squares it is too difficult to manoeuvre.

Try as I might I could not get the bats in my sights. This is slightly compensated by the large choice of game options which enables you to jump to the next sequence — but even after two hours of play I could not get beyond the bats and onto the next wave through my own skill.

The missile graphics are not very clear — just one faint line of laser fire. And the screen blanks out every time you hit a creature, albeit only for a split second.

On the plus side the game offered a comprehensive list of game options including a choice of the three Spectrum joysticks now coming on the market.

Superb graphics and game presentation, but not for the non-persistent. 3D Tunnel is manufactured by New Generation software of Bristol and is available from W. H. Smith at £5.95.

- **Getting Started** 9
- **Value** 6
- **Playability** 6

BEWARE BOUNCING MISSILES

PENETRATOR

Penetrator is the best Scramble type available so far for the Sinclair Spectrum. Running on the 48K model only, the graphics are truly impressive.

As with arcade Scramble it is not really your score that is of the utmost importance but how far you can get into the Scramble system. Penetrator challenges you to fly through four levels of progressive difficulty.

The first of these is gently undulating terrain with only the ground-to-air missiles to worry about. Soon after this you fly into a tunnel and you will have to move up and down with great precision.

The most difficult stage of the game is the maze with its sharp vertical drops and walls that appear suddenly in front of you.

Further still, and you come across bouncing missiles which fall down from the ceiling as if suspended on springs.

Your ship has five flight controls. Up, down, thrust, forward and brakes which have the effect of slowing down the scrolling terrain to enable you to drop down or rise up to avoid flying into an obstacle.

Playability of Penetrator is greatly improved by a comprehensive list of game options. One or two players can play and you can choose the type of landscape you wish to negotiate with the "terrain editor".

The game stores your current high score and also enables the five top scores of the session to be entered.

Despite this, my overall impression was of a most enjoyable and addictive game. Definitely in the top five Spectrum games.

Penetrator is produced by Melbourne House software and is available from W. H. Smith at £6.95.

- **Getting started** 9
- **Value** 8
- **Playability** 9

HERE COME THE ALIENS AGAIN!

GALAXIANS

Remember those twirling, swirling aliens Galaxians? Atari do and they've released a cartridge for the 400 and 800 full of them!

This is a most impressive copy of the arcade original. I could see no major differences between the computer game and the arcade version.

The Galaxians attack in random formation, sometimes peeling off from the uniform columns one by one, or attacking in waves of three.

As in the arcade game the yellow commander ships scream in from behind the blue drone ships and are the key to high scores. If you can pick these off you can score up to eight hundred bonus points.

To repel the Galaxians you have only three ships but you can earn a bonus ship by notching up 5,000 points. From then on you must fire accurately and quickly.

The game gets progressively difficult. The more sheets of Galaxians you blast out of the skies the quicker and heavier their firepower.

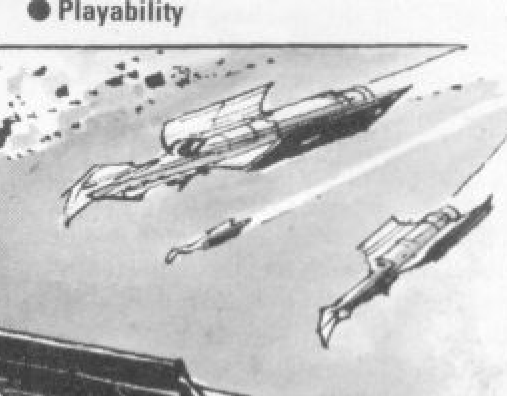
Screen instructions report on your current score, the high score, skill level, and a red flag system records the number of screens wiped clean.

Galaxians is a tried and successfully tested arcade game. I could not fight off the tiniest twinge of boredom, however, as I blasted the umpteenth alien.

Surely a company like Atari who were big enough to market Pacman when everyone else was blasting aliens doesn't need to revert back to blasting aliens in 1983? I hope not anyway. I'm getting slightly tired of being a space ace!

Still, a good home conversion of a classic arcade game and, if you can afford it, a nice one to have in the collection. Galaxians is available from your Atari dealer now at £28.95.

- **Getting started** 7
- **Value** 7
- **Playability** 8



PUT SOME STARS IN YOUR EYES . . .

STARSHIP COMMAND

There's more than a touch of Asteroids in Acornsoft's new game for the BBC Model B, Starship Command.

An impressive simulation of movement is created as the aliens scroll past your stationary ship, which is armed with impressive flight controls. Long and short range scanners tell you the positions in the galaxy of the various aliens.

You also have shields to protect you from alien torpedoes.

Your mission is to protect a planet from invading enemy spaceships. When your mission is completed the Starship Commanders will give you their comments on how they think you have performed and your worthiness for the next mission.

These comments are not always very complimentary. The best I managed was "satisfactory" and on more than one occasion the Commanders told me they were "furious", "displeased", and "disappointed".

A careful eye on your energy banks is the key to promotion in the Starfleet as this will ensure a successful mission. Each starship has four energy banks which are constantly recharging.

You can score points by ramming the aliens but they are worth more if you shoot them.

As you work your way up through the ships and missions the challenges get more difficult as the aliens become faster and more accurate with their torpedoes.

The game can be played using the keyboard or joysticks and is available from Acornsoft of Cambridge at £9.95 for the BBC Model B.

- **Getting started** 8
- **Value** 8
- **Playability** 9



MAKE YOUR CONTRIBUTION TO SPECIAL EDUCATION MORE EFFECTIVE

Robyn Frankham copes very well with her learning problems, thanks to developments with computers in special education. Like many other children, she now has the ability to communicate with the aid of microelectronic devices which help her to write essays, draw pictures and most important of all, to gain her independence.

Learning To Cope '83 — Computers in Special Education, is the second of this annual publication which presents the story of Robyn and how many other physically and mentally handicapped children and adults are coping with their futures. Tremendous progress is being made through the manufacture of specialised devices and through the dedication of teachers and parents.

Learning To Cope '83 looks at specialised computer hardware and software and brings you the latest developments in applications covering all aspects of special education. Read for yourself how committed people have developed and redesigned new and existing equipment to help those in special education help themselves.

We can all help if we care enough.

Learning To Cope '83 — Computers in Special Education £2

Please send me a copy of Learning To Cope '83 — Computers in Special Education.
I enclose a cheque/postal order made payable to Educational Computing for £2 (including p&p).

Name..

Position..

Establishment..

Address..

Signed..

Now please post to: Learning To Cope '83, 8 Herbal Hill, London EC1R 5JB.

Salamander Software

DRAGON 32 AND BBC MODEL B SOFTWARE

DRAGON-TREK £9.95
A real time version of the classic space game featuring full colour tactical, status and long-range scanner displays, hyperprobe, the Faerie Queen, Klingons and Klingon commanders, tractor beams, enemy movement, black holes and much more. Choose from ten levels of difficulty and three sizes of galaxy. Comes complete with 16-page flight manual. JOYSTICK (1) REQUIRED. Dragon Data Approved

WIZARD WAR £7.95
A game of magical combat between the Wizards of the Tri-Suns for supremacy of the planet Xarg. Both dexterity and deduction are needed in order to outwit your opponent as spell is traded against spell. Comes complete with 12-page illustrated spell book. JOYSTICKS (2) REQUIRED. Dragon Data Approved.

GOLF £7.95
An accurate interpretation of the game of golf written by a keen club player. Allows match play between two players or one player may play using the Stableford points system widely used for competition golf. Features full club selection, hazards, out of bounds and player handicaps. Dragon Data Approved.

GRAND PRIX £7.95
Do you have the potential to be a champion Formula 1 driver? Find out when you race on these 8 famous Grand Prix tracks from around the world. For 1 or 2 players. 2 joysticks required. Dragon Data Approved.

GAMES COMPENDIUM D1 £7.95
Six great games for the whole family — Donkey Derby, Blackjack, Kingdom, Hunt the Wumpus, Noughts and Crosses and Lunar Lander. Dragon Data Approved.

VULCAN NOUGHTS AND CROSSES £7.95
A three-dimensional game of noughts and crosses for one or two players. Also includes a zero player option where the machine plays itself. Can you out-think your Dragon? Dragon Data Approved.

THE EDG GRAPHICS PACKAGE £24.95

For the BBC Model B Microcomputer

An advanced picture drawing system developed by a firm of consulting engineers to the oil and utility industries worldwide. Uses cassette tapes for software and picture storage and is controlled entirely by normal keyboard input — no extra hardware required. The main system features are:

★ Picture drawing in mode 0, 1 or 2.
★ Actual and Logical colour changes at any time.
★ Drawing functions:
Lines, boxes, circles, arcs, test, shape repetition.
★ Drawing aids:
Grid, elastic band, save and home cursor (5 positions).
★ Colour fill.
★ Text window showing x, y cursor position, length, angle, colour menu and current colour.
★ Saving and Loading of picture using cassette tapes.
★ Multi-file pictures facilitating very complex drawings.
★ Flashing cross-hairs cursor.
★ User instructions/prompts.

This package comes complete with a spiral bound manual.

SEND SAE FOR CATALOGUE OF OUR FULL RANGE OF DRAGON AND BBC MODEL B SOFTWARE

Cheques or postal orders payable to **Salamander Software, 27 Ditchling Rise, Brighton, East Sussex BN1 4QL.**

Tel: 0273 771942

PLEASE ADD 50p P&P TO ALL ORDERS

Programmers wanted: good royalties paid! Trade enquiries welcome.



Make Friday you



★ **Personal Computer News** is weekly, published every Friday.

★ **Personal Computer News** is only 35p.

Around a hundred pages printed on glossy paper, much of it in full colour.

Probably the best value to be found on your newsagents shelves.

★ **Personal Computer News** is edited by the largest editorial team working on any microcomputer publication in Britain. We have individual editors working on hardware, software, peripherals, features, listings and programs – fourteen of them in all.

A massive investment of talent and expertise with only one aim. To make **PCN** the finest microcomputing title in Europe.

★ Our deadlines on news and features are short.

That means we get to publish comprehensive hardware tests, software reviews, news and much else besides, weeks and weeks before monthly titles

r day of discovery.



can hope to do so.

Personal Computer News is carrying scoop reviews and tests in virtually every issue.

Whatever your particular interest in the world of microcomputing, you'll find it first in **PCN.**

★ **Personal Computer News** comes from the publishers of **Personal Computer World.**

That means you can rest assured on the quality and independence of the editorial package.

★ Every issue of **Personal Computer News** carries a pull out 'part-work' which will gradually build into a comprehensive library on microcomputing.

In addition, you'll find free Readers' Buy and Sell ads, a totally unique programs listing section for the more popular micros, Buyers' Guides, language articles and much, much more.

★ Make Friday your day of discovery. Try **Personal Computer News.** The Complete Computing Weekly.



SOFTWARE
FOR ALL

For Vic-20, Atari, Texas Instruments & Sinclair





Just £6 inclusive **MISSION 99** Texas Instruments

THERE'S TERROR IN THE STREETS, MANHATTAN IS UNDER ATTACK, YOU'RE THE ENEMY, DON'T MISS IT.

Supplied on Cassette with full instructions for the standard TI99/4A.

GROUND FORCE ZERO **Just £5 inclusive** **Sinclair ZX Spectrum**

The Ground Forces have been destroyed so the air attack must begin and you're in control!

A Superb Arcade Game for the 16k or 48k Spectrum

Jupiter ACE — TITAN Goes Forth....

ACE INVASION Only £5 inclusive

The name says it all, invaders as you've never seen them before. A fast action arcade game for the sensational (unexpanded) Jupiter Ace.

TITAN PROGRAMS

THE COMPUTER PALACE, 46 MARKET PLACE CHIPPENHAM, WILTSHIRE SN15 3HU ENGLAND

IMMEDIATE DELIVERY

Please send me ....

I enclose cheque/P.O. for .... OR Please debit my Access No ....

Barclaycard No .... Expiry date ....

Name ....

Address ....

Post Code ....

Dealers Discount Available

ACCESS, BARCLAYCARD ORDERS WELCOME ON 24hr ANSAPHONE 0249 653824 or mail to

TITAN PROGRAMS, THE COMPUTER PALACE, 46 MARKET PLACE, CHIPPENHAM, WILTSHIRE, SN15 3HU

ELECTRONEQUIP

(Authorised BBC Dealer and Service Centre)

BBC1	BBC Micro Model A	299.00
BBC2	BBC Micro Model B	399.00
BBC3	BBC Model A Micro with 32K	333.50
BBC4	BBC Model A Micro 32K & VIA	339.50
BBC21	Upgrade Model A to B	99.82
BBC27	Disc Upgrade for BBC B	109.25
BBC30	14" Colour Monitor for BBC	286.25
BBC33	BMC12A 12" Black/Green Monitor	90.85
BBC36	**14" Monitor/TV 80 columns**	**244.95**
BBC40	Cassette Recorder for BBC	29.90
BBC41	Single 5.25" Disc Drive 100K	265.00
BBC42	Dual 5.25" Disc Drive for BBC	447.00
BBC45	New improved Cassette for BBC	35.88
BBC48	Dual 800K low profile disc drives	897.00
BBC49	5.25" Discs for BBC 40/80 tracks	2.20
BBC50	Epson MX80T type 3 for BBC	373.75
BBC54	Daisy Wheel printer for BBC	558.90
BBC70	Plinth/Stowage for BBC	29.90

Large stocks. Prices inclusive of VAT.
All prices inclusive of postage except micros £3
Access and Barclaycard welcome.

Electronequip

36-38 West Street, Fareham, Hants. PO16 0JW.
Tel: 0329 230670

New Generation Software

From M. E. Evans the author of the highly acclaimed 3D MONSTER MAZE and 3D DEFENDER



3D TUNNEL (16K & 48K Versions on one tape)
What lies in the depths of the tunnel? Flapping bats, leaping toads, scurrying rats, crawling spiders, all appear live in the 3D TUNNEL as it weaves about. We leave the last object to your imagination. (Not in 16K version). Price £5.95, special introductory offer at £4.95 until February 28th.

TWO 3D GAMES FOR THE SPECTRUM



ESCAPE (requires only 16K)
Can you eascape from the dinosaur infested maze? 3D grandstand view provides dinosaurs with the opportunity to hide behind the hedges or to soar over them to swoop down on you. "One of the best and most original games we have seen for the Spectrum so far". SINCLAIR USER. Price £4.95

For instant CREDIT CARD Sales by phone only ring 01-930-9232

Orders to: NEW GENERATION SOFTWARE dept CVG FREEPOST (BS 3433) (no stamp required in UK) OLDLAND COMMON, BRISTOL BS15 6BR

Please send s.a.e. with all enquires and for lists of stockists. TRADE ENQUIRIES WELCOME AT ADDRESS ABOVE.



If your order contains over £120 worth of computer hardware apply now for interest free credit by telephoning: Mail-order: (0702) 552911. London Shop: 01-748 0926. Birmingham Shop: 021-356 7292. Southend Shop: 0702 554000 or write to P.O. Box 3, Rayleigh, Essex SS6 8LR.

You pay 10% down, then 10% per month for a further nine months (to nearest penny). Example: Atari 400 48K. Cash price £299. Credit terms: £29.90 down, then £29.90 per month for nine months. Total £299. Credit quotations on request. This offer subject to approval which can take up to 48 hours (APR = 0%).

THE NEW COMMODORE 64

The incredible new computer from Commodore comes with 64K RAM fitted! Plus 16 colours hi-res graphics, 320 x 200 pixels, 40 columns by 25 lines, Z80 micro processor can be added — that means you can run CP/M software, 8 independently movable Sprites with collision detection, and a sound generator with 3 voices, 4 wave-forms, envelope and filter to rival some dedicated music synthesisers. And all this at the most incredible price ever.

(AF56L) Only £339.00

DRAGON 32



The amazing new British computer with a full-travel standard keyboard, a 16-bit microprocessor, 32K RAM fitted (expandable to 64K and later to 256K!!), 9 colours, hi-res graphics and Microsoft extended colour BASIC (the very best BASIC to learn with). It can be used with virtually any ordinary cassette recorder, it has a printer interface (Centronics-type), joysticks are available and it's incredible value for money.

(AF57M) Only £199.50.

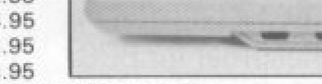
Lots of new Dragon software available.

THE AMAZING ATARI COMPUTERS

4 Consoles Available:
Atari 400, 16K RAM (AF36P) £199.95
Atari 400, 48K RAM (AF37S) £249.00
Atari 800, 16K RAM (AF02C) £399.00
Atari 800, 48K RAM (AF55K) £440.00

★All above with BASIC & handbooks Carriage free, delivery next day by Datapost

Other hardware:		
Cassette Recorder	(AF28F)	£50.00
Disk Drive	(AF06G)	£299.95
Thermal Printer	(AF04E)	£199.95
Epson MX80T Mk III	(AF38R)	£399.95
Epson MX80F/T Mk III	(AF40T)	£447.35
Printer Interface for 400	(AF41U)	£59.95
Printer Interface for 800	(AF42V)	£59.95
Interface Module	(AF29G)	£135.00
Versawriter	(AF43W)	£199.95
16K RAM Module	(AF08J)	£55.00
48K RAM Module for 400	(AF44X)	£99.95
48K Upgrade for 400	(AF45Y)	£75.00
Floppy Disk	(YX87U)	£2.50
Le Stick	(AC45Y)	£24.95
Joystick Controllers (Pair)	(AC37S)	£13.95
Paddle Controllers (Pair)	(AC30H)	£13.95





For full details ask for our hardware leaflet (XH54J) SAE appreciated

JOIN THE U.K. ATARI COMPUTER OWNERS' CLUB

An independent users' group. Four issues of the club magazine for only £3.00! Address your subscription to Ron. Issue 1 of the club magazine featured a tutorial on character set redefinition and contained a collection of demonstration and games programs and lots more. Issue 2 featured a tutorial on player/missile graphics, an article about graphics on computers, a selection of members' contributions to the program library and much more.

THE FINEST SELECTION OF ATARI SOFTWARE

Teach Yourself Programs		
Conversational French	-5C-16K-YG44X	£39.95
Conversational German	-5C-16K-YG45Y	£39.95
Conversational Spanish	-5C-16K-YG46A	£39.95
Conversational Italian	-5C-16K-YG47B	£39.95
Touch Typing	-2C-16K-YG49D	£19.95
States & Capitals	-1C-16K-YG56L	£14.95
Euro Countries & Capitals	-1C-16K-YG57M	£14.95
•Kids 1 (3 Programs)	-1C-16K-BG00A	£11.75
•Kids 2 (3 Programs)	-1C-16K-BG02C	£11.75
My First Alphabet	-1D-32K-KB23A	£29.95

Learn Programming		
Invitation To Programming 1	-1C-8K-YG43W	£19.95
Invitation To Programming 2	-2C-8K-BQ67X	£22.95
Invitation To Programming 3	-2C-8K-BQ68Y	£22.95
•Basics of Animation	-1C-16K-BQ57M	£14.50
•Player Missile Graphics	-1C-32K-BQ59P	£21.25
•Display Lists	-1C-16K-BQ51F	£14.50
•Horiz/Vertical Scrolling	-1C-16K-BQ53H	£14.50
•Page Flipping	-1C-16K-BQ55K	£14.50
•Sounds & Music	-1C-16K-BG04E	£14.50
•Tricky Tutorials First 6	-3C-32K-BG06G	£69.95
Page 6	-1D-24K-KB24B	£27.50

Business Programs		
Visicalc	-1D-32K-YL39N	£119.95
Atari Word Processor	-1C&3D-48K-YG42V	£99.95
Text Wizard	-1D-32K-BQ99H	£75.00
•Mini Word Processor	-1C-32K-BG08J	£14.50
File-It 2	-1D-48K-BG10L	£33.87
Filemanager 800	-1D-40K-BG59P	£75.00
Graph-It	-2C-16K-YG51F	£14.95
Statistics	-1C-16K-YG52G	£14.95
Mortgage & Loan Analysis	-1C-16K-BQ66W	£14.95
•Bob's Business	-1C-32K-BG11M	£10.59

Adventure Games		
Galactic Empire	-1C-32K-BQ14Q	£14.50
Galactic Trader	-1C-32K-KB25C	£14.50
•Galaxy	-1C-16K-BG75S	£14.95
•Rescue At Rigel	-1C-32K-BQ21X	£20.75
•Datestones of Ryn	-1C-32K-BQ22Y	£13.80
•Star Warrior	-1C-32K-BQ24B	£27.45
•Voyager I	-1C-32K-BQ95D	£14.95
•Invasion Orion	-1C-24K-BQ23A	£17.25
•GFS Sorceress	-1C-48K-KB26D	£21.95
•Planet Miners	-1C-24K-BG89W	£11.95
Star Flight	-1D-40K-BG26D	£14.95
•Journey To The Planets	-1C-32K-KB28F	£20.45
•Crush, Crumble & Chomp	-1C-32K-BQ83E	£20.75
Mission: Asteroid	-1D-40K-BQ91Y	£17.19
Wizard & The Princess	-1D-40K-BQ25C	£21.79
Ulysses & Golden Fleece	-2D-40K-BQ92A	£20.64
Dr Goodcode's Cavern	-1D-48K-KB04E	£21.95
Escape From Vulcan's Isle	-1D-40K-KB30H	£20.75
Zork I	-1D-32K-BQ94C	£29.95
Zork II	-1D-32K-BQ95D	£29.95
Zork III	-1D-32K-KB31J	£29.95
Ali Baba & The 40 Thieves	-1D-32K-BQ78K	£25.93
•Temple Of Apshai (Part 1)	-1C-32K-BQ85G	£27.45
•Upper Reaches (Part 2)	-1C-32K-BQ87U	£13.80
•Curse Of Ra (Part 3)	-1C-32K-BQ89W	£13.80
Dragon's Eye	-1D-40K-KB32K	£20.75
Crypt Of The Undead	-1D-40K-KB33L	£20.75
•Empire Of The Overmind	-1C-40K-BG73Q	£21.95
•King Arthur's Heir	-1C-16K-KB97F	£20.75
•Lords Of Karma	-1C-40K-BG79L	£14.95
Nightmare	-1D-40K-KB35Q	£20.75
Analog Adventure	-1D-32K-BQ33L	£16.95
Adventure Land	-1C-24K-BQ00A	£17.95
Pirate Adventure	-1C-24K-BQ01B	£17.95
Mission Impossible	-1C-24K-BQ02C	£17.95
Voodoo Castle	-1C-24K-BQ03D	£17.95
The Count	-1C-24K-BQ04E	£17.95
Strange Odyssey	-1C-24K-BQ05F	£17.95
Mystery Fun House	-1C-24K-BQ06G	£17.95
Pyramid Of Doom	-1C-24K-BQ07H	£17.95
Ghost Town	-1C-24K-BQ08J	£17.95
Savage Island I	-1C-24K-BQ09K	£17.95
Savage Island II	-1C-24K-BQ10L	£17.95
Golden Voyage	-1C-24K-BQ11M	£17.95
Treasure Quest	-1C-16K-KB36P	£10.95
Softporn Adventure	-1D-40K-BQ93B	£20.64
Deadline	-2D-32K-BQ96E	£37.35
Starcross	-1D-32K-KB37S	£29.95
Energy Czar	-1C-16K-YG53H	£14.95
Kingdom	-1C-8K-YG55K	£14.95
Space Shuttle Module I	-1D-32K-BG65V	£18.95

War Games		
The Shattered Alliance	-1D-48K-BQ98G	£28.95
Legionnaire	-1C-16K-KB00A	£25.95
•The Battle Of Shiloh	-1C-40K-BG63T	£28.95
•Dnieper River Line	-1C-48K-BG71N	£18.95
•Tanktics	-1C-24K-BG93B	£17.45
•Nth Atlantic Convoy Raider	-1C-16K-BG83E	£11.95
•Midway Campaign	-1C-32K-BG81C	£11.95
•Battle For Normandy	-1C-32K-KB38R	£28.95
•Tigers In The Snow	-1C-40K-KB01B	£28.95
War	-1D-32K-KB40T	£17.95
•B1 Nuclear Bomber	-1C-16K-BG68Y	£11.95
•Nukewar	-1C-16K-BG87U	£11.95
•Conflict 2500	-1C-32K-BG85G	£11.95
•Cytron Masters	-1C-32K-KB41U	£28.95

Arcade Games		
Star Raiders	-1E-8K-YG66W	£29.95
•Choplifter	-1E-16K-KB87U	£34.95

Commodore 64
32 computer hardware



THE NEW MAPSOFT CATALOGUE

48 full colour pages of Atari, Dragon and VIC 20 hardware and software. A comprehensive guide to what's available. Price £1.



THE NEW MAPLIN CATALOGUE

contains full details of all the computers and most of the software shown here and much more. On sale now in all branches of W.H. Smith price £1.25. Or send £1.50 to P.O. Box 3, Rayleigh, Essex.

ATARI SOFTWARE continued

Embargo	-1E-8K-KB43W	£34.95
Caverns Of Mars	-1D-16K-BQ69A	£29.95
K-Star Patrol	-1E-8K-BG52G	£34.95
*Protector	-1E-16K-KB88V	£34.95
*Space Chase	-1C-16K-BG42V	£10.95
Gorf	-1E-16K-KB44X	£34.95
Andromeda	-1D-24K-KB17T	£22.50
Bomber Attack	-1C-16K-BG70M	£11.95
Asteroids	-1E-8K-YG60Q	£29.95
*Stellar Shuttle	-1C-16K-KB45Y	£23.50
*Race In Space	-1C-16K-BQ35Q	£14.95
Missile Command	-1E-8K-YG64U	£29.95
Space Invaders	-1E-8K-YG70M	£29.95
Deluxe Invaders	-1E-16K-KB89W	£31.95
K-razy Kritters	-1E-8K-BG51F	£34.95
*Rear Guard	-1C-16K-KB47B	£14.50
*Shootout At OK Galaxy	-1C-16K-BG97F	£14.95
Defender	-1E-16K-KF10L	£29.95
Galaxian	-1E-16K-KF11M	£29.95
*Stratos	-1C-16K-KB53H	£24.95
*Galactic Chase	-1C-16K-BQ62S	£16.95
Threshold	-1D-40K-BG18U	£27.54
*Space Games (3 Programs)	-1C-32K-KB55K	£17.95
*Lunar Lander	-1C-24K-BQ16S	£10.95
*Nautilus	-1C-32K-KB13P	£27.50
Seafox	-1D-48K-KB57M	£23.50
*Sea Dragon	-1C-16K-KB58N	£24.95
K-razy Shoot Out	-1E-8K-BQ63T	£34.95
*Shamus	-1E-16K-KB90X	£34.95
Serpentine	-1E-8K-KB60Q	£34.95
Centipede	-1E-16K-BQ/0M	£29.95
Angle Worms	-1C-8K-BG50E	£10.95
*Bug Off!	-1C-16K-KB61R	£21.95
*Bug Attack	-1C-24K-BG36P	£23.95
*Tutti Frutti	-1C-16K-KB63T	£17.95
*Genetic Drift	-1C-16K-KB65V	£23.50
*Haunted Hill	-1C-16K-BG38R	£16.95
Claim Jumper	-1E-16K-KB67X	£34.95
*Chicken	-1E-16K-KB91Y	£34.95
*Canyon Climber	-1C-16K-BG44X	£23.50
*Frogger	-1C-16K-KB68Y	£22.95
*Preppie	-1C-16K-KB07H	£21.95
*Pacific Coast Highway	-1C-16K-BG13P	£23.50
Fire Bird	-1E-4K-KB70M	£29.95
*Apple Panic	-1C-16K-KB92A	£23.50
Track Attack	-1D-32K-KB05F	£23.50
Pac-Man	-1E-8K-BQ71N	£29.95
Ghost Hunter	-1C-16K-BQ64U	£19.95
*Jawbreaker	-1C-16K-BG17T	£20.64
Mouskattack	-1D-32K-BQ77J	£22.95
K-razy Antiks	-1E-8K-KB16S	£34.95
Pathfinder	-1D-32K-BG33L	£26.66
*Labyrinth	-1C-16K-KB71N	£23.50
*Crossfire	-1E-16K-KB93B	£34.45
Tumble Bugs	-1D-24K-BG46A	£23.50
Wizard Of Wor	-1E-16K-KB94C	£34.95
*Time Bomb	-1C-16K-BG40T	£10.95
Thunder Island	-1C-16K-BQ37S	£10.95
TT Racer	-1C-16K-KB73Q	£19.95
*Dodge Racer	-1C-16K-BG29G	£27.50
*Matchracer	-1C-16K-BG31J	£22.50
*Baja Buggies	-1C-16K-KB74R	£22.95
*Zaxxon	-1C-16K-KF20W	£31.50
*Moon Shuttle	-1C-16K-KF22Y	£27.50
Roadracer/Bowler	-1C-16K-BG99H	£11.95
*Shooting Gallery	-1C-16K-BQ36P	£14.95
*Shooting Arcade	-1C-16K-BG15R	£23.50
Rasterblaster	-1D-32K-BG35Q	£22.95
David's Midnight Magic	-1D-48K-KB78K	£27.50
Super Breakout	-1E-8K-YG67X	£24.95
*Clowns & Balloons	-1C-16K-KB79L	£23.50
Guns Of Fort Defiance	-1C-32K-BG78K	£14.95
Mountain Shoot	-1C-16K-BQ12N	£10.95
*Tank Trap	-1C-16K-YL34M	£9.95

Home Entertainment

Scram	-1C-16K-YG58N	£19.95
Knockout	-1C-16K-KB81C	£14.95
Basketball	-1E-8K-YG61R	£24.95
Cypher Bowl	-1C-16K-BQ20W	£29.50
Sunday Golf	-1C-16K-BQ13P	£10.95
Golf Challenge	-1C-16K-KB82D	£17.19
Tournament & 8-Ball Pool	-1C-16K-BQ45Y	£19.95
*Ricochet	-1C-16K-BG47B	£13.80
Computer Chess	-1E-8K-YG63T	£24.95
Fast Gammon	-1C-8K-YL33L	£16.95

*Gomoku	-1C-16K-BQ18U	£14.95
*Reversi	-1C-16K-BQ19V	£14.95
*Acquire	-1C-16K-BG66W	£14.95
*Stocks & Bonds	-1C-32K-BG91Y	£14.95
Cribbage & Dominoes	-1C-16K-BQ43W	£14.95
*Poker Solitaire	-1C-16K-BQ17T	£10.95
Blackjack	-1C-8K-YG62S	£14.95
Hangman	-1C-8K-YG54J	£14.95
Wordrace	-1D-32K-KB09K	£19.65
Wordrace (Part 2)	-1D-32K-KB10L	£15.66
Abuse	-1D-40K-KB11M	£19.65
Super Cubes & Tilt	-1C-16K-BQ48C	£14.95
Humpty Dumpty Jack & Jill	-1C-16K-BQ38R	£14.95
Hickory Dickory & Baa Baa	-1C-16K-BQ39N	£14.95
European Scene Jigsaws	-2C-16K-BQ41U	£14.95
Video Easel	-1E-8K-BQ72P	£24.95
Micro Painter	-1D-48K-BG56L	£27.50
Paint	-1D-48K-KB22Y	£29.95
Music Composer	-1E-8K-YG48C	£35.95
Movie Themes	-1C-8K-BQ34M	£9.95

Computer Languages

Assembler	-1C-16K-YL32K	£21.95
Syn Assembler	-1D-48K-KB83E	£38.95
Assembler Editor	-1E-8K-YG68Y	£34.50
Macro Assembler	-1D-32K-BQ73Q	£59.95
Basic A+ & Op System A+	-1D-48K-BQ32K	£59.95
Microsoft Basic	-1D-32K-BQ74R	£59.95
Pilot (Educator)	-1E & 2C-16K-BQ75S	£79.95
Pilot (Consumer)	-1E-8K-YG69A	£54.00
QS Forth	-1D-24K-YL29G	£62.95
Tiny-C	-1D-48K-BG62S	£67.80
Inter-Lisp/65	-1D-48K-BG61R	£99.00

Utilities

SAM (Speech Synthesiser)	-1D-32K-KB15R	£47.19
Programming Aids Pack	-1C-16K-BG60Q	£10.95
*Basic Routines	-1C-16K-KB84F	£24.95
*6502 Disassembler	-1C-8K-YL30H	£9.95
Atari World	-1D-40K-BQ27E	£47.95
*3D-Supergraphics	-1C-40K-BQ29G	£31.95
The Next Step	-1D-32K-BG64U	£27.54
K-DOS	-1D-32K-BQ76H	£59.95
Diskey	-1D-32K-KB86T	£39.95
Disk Manager	-1D-32K-BG58N	£27.50
Disk Detective	-1D-16K-BG57M	£23.50
MAC 65 & Op System A+	-1D-32K-BQ30H	£59.95
Telelink	-1E-8K-YG59P	£21.95

Disk versions also available though price and memory size may be different.

Books

Master Memory Map	-XH57M	£4.00
De Re Atari	-WG56L	£16.95
Operating System User's Manual & Hardware Manual	-WA46A	£16.95
Atari Basic-Learning By Using	-WG55K	£6.24
Games For The Atari	-WA47B	£4.45
Atari Basic	-WG05F	£7.65
Atari Sound & Graphics	-WA39N	£8.25
Your Atari Computer	-WA40T	£13.45
6502 Assembly Language Subroutines	-WA05F	£14.90
Advanced 6502 Interfacing	-WA41U	£11.64
Beyond Games (6502)	-WA45Y	£13.00
Computers For People	-WA00A	£8.25
Analog: The Magazine For Atari (6 issues) Annual Subscription	-GG24B	£9.00

Send sae now for our new software leaflet with details of all the above programs. Order As XH52G — Issue 3.

Key: C = Cassette. D = Disk. E = Cartridge. 2C = 2 Cassettes etc. 8K, 16K shows minimum memory requirement.

Note: Order codes shown in brackets. Prices correct at time of going to press. (Errors excluded).

VIC20 COLOUR COMPUTER

Hardware

VIC20 Console	(AF47B)	£159.99
C2N Cassette Unit	(AF48C)	£44.95
VIC Printer	(AF49D)	£230.00
VIC Disk Drive	(AF50E)	£299.99
3K RAM Cartridge	(AF51F)	£29.95
8K RAM Cartridge	(AF52G)	£44.95
16k RAM Cartridge	(AF53H)	£59.95

Joysticks and Paddles

Single Joystick	(AC53H)	£7.50
Pair of Joysticks	(AC37S)	£13.95
Le Stick	(AC45Y)	£24.95
Pair of Paddles	(AC30H)	£13.95

Programming Aid Cartridges

Super Expander: 3K RAM and Hi-res graphics	(AC54J)	£34.95
Programming Aid: Additional commands, function Key programming etc.	(AC55K)	£34.95
Machine Code Monitor	(AC56L)	£34.95

Software (all 3K unless stated)

Introduction to BASIC Cassettes

Part 1	(AC57M)	£14.95
Part 2	(AC58N)	£14.95

Game Programs

Avenger Cartridge	(AC59P)	£19.95
Star Battle Cartridge	(AC60Q)	£19.95
Super Slot Cartridge	(AC61R)	£19.95
Jelly Monsters Cartridge	(AC62S)	£19.95
Alien Cartridge	(AC63T)	£19.95
Super Lander Cartridge	(AC64U)	£19.95
Road Race Cartridge	(AC65V)	£19.95
Rat Race Cartridge	(AC66W)	£19.95
Blitz Cassette	(AC67X)	£4.99
Mole Attack Cartridge	(AC85G)	£24.95
Adventureland Cartridge	(AC86T)	£24.95
Pirate Cove Cartridge	(AC84F)	£24.95
Mission Impossible Cartridge	(AC87U)	£24.95
Voodoo Castle Cartridge	(AC88V)	£24.95
The Count Cartridge	(AC89W)	£24.95
Sargon 2 Chess Cartridge	(AC77J)	£24.95
Gorf Cartridge	(AC90X)	£24.95
Omega Race Cartridge	(AC91Y)	£24.95
Another VIC in The Wall Cassette	(AC78K)	£7.00
VIC Panic Cassette	(AC79L)	£7.00
Cosmiads Cassette	(AC80B)	£7.00
Backgammon Cassette (+3K)	(AC81C)	£7.00
VIC-Men Cassette	(AC82D)	£7.00
VIC Asteroids Cassette	(AC83E)	£7.00

Business Programs

Simplicalc Disk (+16K)	(AC92A)	£24.95
Simplicalc Cassette (+16K)	(AC93B)	£19.95
VIC Stock Control Cassette (+8K)	(AC94C)	£19.95
VIC File Disk (+16K)	(AC95D)	£24.95
VIC Writer Disk (+8K)	(AC96E)	£24.95
VIC Writer Cassette (+8K)	(AC97F)	£19.95

Education (CSE & GCE 'O' Level Revision)

All cassette based and require at least 8K expansion memory.

English Language	(AC98G)	£9.99
Mathematics 1	(AC99H)	£9.99
Mathematics 2	(BC00A)	£9.99
Biology	(BC01B)	£9.99
Chemistry	(BC02C)	£9.99
Physics	(BC03D)	£9.99
Computer Studies	(BC04E)	£9.99
Geography	(BC05F)	£9.99
History	(BC06G)	£9.99
Arithmetic for 9 to 11 year olds	(BC07H)	£9.99
Reading for 9 to 11 year olds	(BC08J)	£9.99
General Knowledge for 9 to 11 year olds	(BC09K)	£9.99
Spelling for 9 to 11 year olds	(BC10L)	£9.99

Home Programs

All cassette based and require at least 8K expansion memory.

Quizmaster	(BC11M)	£9.99
Know Your Own IQ	(BC12N)	£9.99
Junior IQ	(BC13P)	£9.99
Know Your Own Personality	(BC14Q)	£9.99
The Robert Carrier Family Menu Planner	(BC15R)	£9.99
VIC Money Manager	(BC16S)	£9.99
VIC Road User & Highway Code	(BC17T)	£9.99
Garden Planner	(BC18U)	£9.99
Interior Designer	(BC19V)	£9.99
BBC "Ask The Family"	(BC20W)	£9.99
BBC "Mastermind"	(BC21X)	£9.99
"Mastermind" additional General Knowledge		
Data 1	(BC22Y)	£2.50
Data 2	(BC23A)	£2.50
Data 3	(BC24B)	£2.50
Data 4	(BC25C)	£2.50
"Mastermind" additional Specialist Knowledge		
Wine & Food	(BC26D)	£2.50
Music	(BC27E)	£2.50
Sport & Games	(BC28F)	£2.50
Films & TV	(BC29G)	£2.50

Books About VIC

Learn Programming on the VIC	(WA31J)	£2.50
VIC Revealed	(WA32K)	£10.00
VIC Programmers Reference Guide	(WA33L)	£9.95
VIC Graphics	(WA48C)	£10.00

Lots of new VIC20 software now available.



Maplin Electronic Supplies Ltd., P.O. Box 3, Rayleigh, Essex. Tel: Southend (0702) 552911/554155.

**Demonstrations at our shops NOW. See the computers in action at 159-161 King St., Hammersmith W6. Tel: 01-748 0926
284 London Road, Westcliff-on-Sea, Essex. Tel: (0702) 554000
Lynton Square, Perry Barr, Birmingham: Tel: (021) 356 7292.**

* 32K RAM PACK for the VIC 20 *

only £69-95, the most versatile ram pack for the Vic 20.

Switchable to 3K, 16K, 24K plus ram 1, 2, 3 or Block 5 for machine code or data statements.

Also 3K ram pack £19.95, 8K ram pack £29.95, 16K ram pack £44.95, 4 slot Mother Board £24.95. All items slot directly into the back of your Vic 20. All prices include V.A.T.

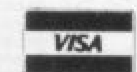
We stock software by Audiogenic, Commodore, Rabbit, P.C.S., Computer Room, Hi-Tech, Llamasoft, Interceptor, Romik and Bug Byte. Send S.A.E. for full list.

Please send the following:

Qty.	
	32K ram pack @ £69.95 each
	16K ram pack @ £44.95 each
	8K ram pack @ £29.95 each
	3K ram pack @ £19.95 each
	Mother Board @ £24.95 each

PLUS £1.00 post & packaging per order





To **Ram Electronics (Fleet) Ltd, 106, Fleet Road, Fleet, Hants GU13 8PA. (02514) 5858**

I enclose P.O. or cheque total £ ____________

charge my ACCESS or BARCLAYCARD

Account No ____________

Name ____________

Address ____________



CVG0483

THE GREATEST PROGRAMMING AID SINCE FINGERS

NEW

Cuts Down Program Entry Time

- *How many hours do you spend de-bugging programs?*
- *How many times have you traced a bug to a typing error?*
- *How many times have you wished for another pair of hands to keep your place in program listings?*
- *How many times have you had back-ache, neck-ache and eye-strain through copying listings at uncomfortable angles?*

THE EASIREADER FROM BUGBEAR

Saves Hours in De-bugging time

- Over 99% of bugs in programs copied from printout listings are the result of entry errors — errors anyone with only one pair of hands can make. Even one mistake can take hours to trace.

The EASIREADER Minimises Bugs by Minimising Entry Errors

- The attractive perspex stand can be positioned where most comfortable, avoiding stiff necks and aching backs... strain causes mistakes!
- The specially designed cursor prevents skipping between complicated and similar-looking lines while allowing you to 'read through' simple lines.
- The **EASIREADER** keeps your place for two-handed keyboard entries, i.e. when using a Sinclair computer or just using the 'shift' key.
- It will even scan the off-horizontal listings found in many magazines.
- The **EASIREADER** can handle all normal magazines up to A4 size, single sheets, computer printouts and most books.

HELP BANISH BUGS
Make your programming easier and more comfortable.
SAVE TIME AND EFFORT – AVOID FRUSTRATION

Send for your **EASIREADER** now at a special introductory price of **£12.99**. Please add £1.25 p&p.

BUGBEAR, DEPT. V3, NICHOLSON BUILDINGS, TEMPLETOWN, SOUTH SHIELDS, TYNE & WEAR NE33 5RZ.



© BUGBEAR 1982

Patent Pending No. 8232718

PALANTIR PROGRAMS LTD

FANTASTIC PROGRAM OFFERS
SPECTRUM. ZX81 BBC. SHARP MZ80-K. VIC 20.

SPECTREK. For the 48K Spectrum. A real-time adventure in deep space. Destroy the Klingons with the help of the on-board computer. £5.00

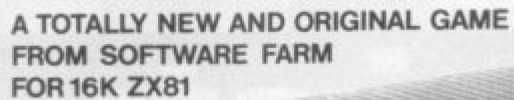
GEOGRAPHIC. Test your childs geography skills with these 6 programs for the 5K VIC20. Europe, South America, Gt. Britain, World Continents and Oceans, Australia & North America. All 6 on 1 cassette for only £7.95.

DEATH STAR ATTACK and memory match for the 16K ZX81 2 programs on 1 cassette. One a test of speed & skill, the other a test of memory. £5.00.

MUSIC COMPOSER. For the BBC Model B. Compose your own tunes and store them on cassette for later use. £7.95.

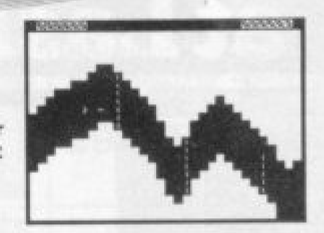
SHARP SELECTION. 6 programs for the MZ80-K Mastermind, Fox & Hounds, Noughts & Crosses, Pontoon, Hangman & Surround. All 6 on 1 cassette for only £9.95.

All prices inclusive of V.A.T. & P&P. Send cheque/P.O. to: PALANTIR PROGRAMS LTD. BROCKHAM, HYDE LANE, DANBURY, ESSEX.





the Super Scramble



YOUR MISSION

To penetrate the Witches Defences, Enter her Cavern and Destroy her wicked Heart

THE WITCHES DEFENCES

STALAGMITES AND STALACTITES which grow across your path. Blast a way through with your Lazer Cannon (but beware — a surprise is in store fore you!).
VOLCANOES to get past alive — if you can! — an ever increasing amount of white-hot Larva to avoid the closer you get to the witches cavern.
VAMPIRE BATS that cling to your ship, making your controls sluggish and finally (if you are not careful) dragging you down to your destruction.
CAVE-INS should you hit the side of the cave with your Lazer Cannon or Bomb, part of the roof will cave-in on you — the greater the landslides to avoid each time!.
THE NEARER you get to the Witches Cavern, the more of her Defences she will throw at you at once. Should you survive all of them (highly unlikely) then you must contend with the Witch herself! Avoid being turned to stone by her spells while attempting to destroy her wicked Heart!.

- *Written entirely in Machine Code
- *Hall of Fame
- *1 or 2 Players
- *Mystery Score positions to bomb
- *5 Skill Levels

DESTINED TO BECOME A CLASSIC!

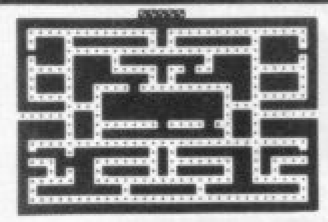
AND ONLY £5.95

THE SOFTWARE FARM, DEPT CG,
CRAIGO FARM, BOTANY BAY, TINTERN, GWENT



GOBBLERS

PUCKMAN FOR 16K ZX81



BEAT THAT HIGH SCORE! GOBBLE THOSE DOTS BEFORE THOSE MEANIES GOBBLE YOU! YOUR ONLY AIDES ARE FOUR "POWER PILLS" WHICH MAKE THE MEANIES EDIBLE. BUT NOT FOR LONG!

- MACHINE CODED FOR FAST ACTION
- EXTRA "GOBBLER" FOR 10,000 POINTS
- ON SCREEN SCORING
- HIGH SCORE WITH "ENTER NAME" FACILITY
- UP TO 4 PLAYERS

AN ANNOYINGLY FRUSTRATING GAME! FOR ONLY £5.95

ASTEROIDS

FOR 16K ZX81

STAY ALIVE AS LONG AS POSSIBLE IN OPEN SPACE FILLED WITH FLYING ROCKS. SCORE BY SHOOTING THEM – WHICH ALSO CAUSES THEM TO BREAK INTO LOTS OF LITTLE BITS AND MAKES LIFE EVEN WORSE!

- MACHINE CODED FOR FAST ACTION
- ON SCREEN SCORING
- HIGH SCORE WITH 'ENTER NAME' FACILITY
- UP TO 4 PLAYERS
- EXTRA SHIP FOR 1,000 PTS (NOT AS EASY AS IT SOUNDS!)
- SHIP MOVES JUST LIKE ARCADE VERSION
- ROTATE LEFT/ROTATE RIGHT/THRUST
- FIRES IN ALL 8 DIRECTIONS
- INCREASING NUMBER OF ASTEROIDS
- THREE ASTEROID SIZES
- 'NASTY' ALIEN SPACE-SHIP (FIRES BACK!)

THIS GAME IS JUST AS BAD! – AND ONLY £5.95
AN OFFER FOR REAL MASOCHISTS – BOTH TAPES FOR £9.95

MAIL ORDER ONLY-PLEASE MAKE CHEQUE/PO PAYABLE TO
THE SOFTWARE FARM, DEPT CG,
CRAIGO FARM. BOTANY BAY. TINTERN, GWENT

THE Midland Computer Fair

Personal computers
Home computing
Small business systems

BINGLEY HALL, BIRMINGHAM

28-30 APRIL 1983

Thurs & Fri 10am – 6pm
Saturday 10am – 5pm

Presented by YOUR COMPUTER Practical Computing

This event is the first of its kind in the Midlands, and gives you the opportunity to see and compare the enormous range of personal and home computers, small business systems, microcomputers, software packages, cassettes and scores of the very latest computer games – try them for yourself – decide how much, or how little it takes to build up your own personal computer system.



HOW TO GET THERE

BY RAIL Concessionary rail fares are available direct to New Street Station. Further details are available from, British Rail Travel Centre, New Street Station, Birmngham B2 2QA Tel: 021 643 2711.

BY BUS every few minutes from New Street, Corporation Street, Colmore Row and Bull Ring.

BY CAR Bingley Hall is situated close to the city centre and is within easy access to the M1, M5 and M6. Bingley Hall will be road signed by the AA.

Admission prices – Adults £2.00 Children under 16 and O.A.P.'s £1.00. Party Booking: For groups of over 20 people – adults £1.50 children 75p, (plus a free ticket per 20 sold for the organiser or teacher).

For further information contact:
The Exhibition Manager,
Midland Computer Fair,
Reed Exhibitions,
Surrey House,
Throwley Way,
Sutton, Surrey.
Tel: 01-643 8040

Micropoint at Laskys



Note: All three models shown need a separate TV or monitor. Micropoint has a complete range of suitable models from £59.90 (B/W) or £199.90 (Colour).

The magic of the microcomputer without the mystery.

Everything you've ever wanted to know- or learn- about microcomputers is now at Micropoint. In all branches of Laskys.

Micropoint has all you need to make up your mind about micro-computers. You'll find a wide choice of models – and you can test play them all, comparing each model with the next. It has experts who will explain micros to you, in language you can understand. Micropoint has a big selection of programs – they will really make your micro magic. But you get even more than machines and advice, you get good value too.

At Micropoint we keep our prices low by buying in volume and we'll also help you to buy with Interest Free Credit* available on purchases over £250 or more; you could walk into Micropoint, choose your micro and take it away with you! You also get the famous Laskys Commitment, possibly the best after-sales package ever offered, with a 14 day exchange period, a 2-year free guarantee† and service by Laskys own network of specialist engineers.

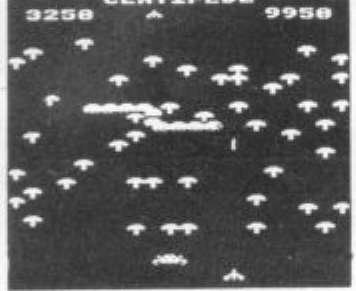
If your already into micros and looking for something new, or better, then Micropoint is the place to find it. Come in and see for yourself.

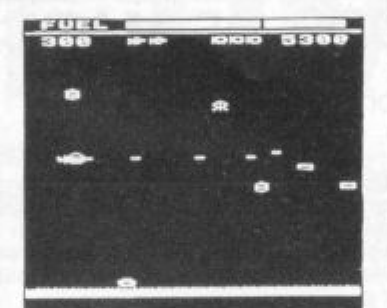
Micropoint opens up to the whole family the fascinating, educational, fun world of micro-computers.

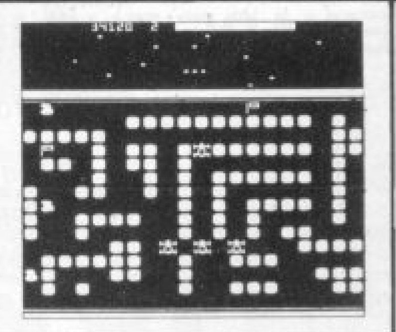
THE BEST (INDEPENDENTLY PRODUCED) BBC MICRO SOFTWARE

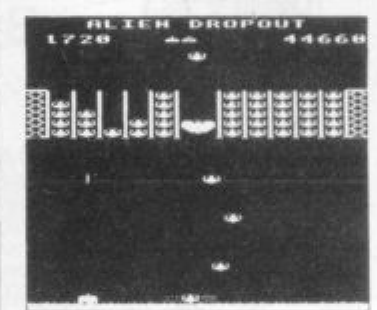
BBC TOP QUALITY MACHINE CODE PROGRAMS **BBC**

SPECIAL OFFER! Deduct £1 per cassette or disc when ordering 2 or more.









CENTIPEDE (32K) £6.50

Incredible arcade type game featuring mushrooms, snails, flies, spiders and the centipedes of course. Excellent graphics and sound. 6 skill levels, hi-score, rankings, bonuses, and increasing difficulty as the spiders become more active and the number of mushrooms increases.

R.M.P. Hanson

SPACE FIGHTER (32K) £6.50

Arcade-style game based upon features from DEFENDER and SCRAMBLE. 5 types of menacing alien fire at you and may attempt to ram you. Separate attack phases, fuel dumps, repeating laser cannon, asteroids, smart bombs, hi-score, rankings, 6 skill levels, sound effects.

R.M.P. Hanson

ROAD RUNNER (32K) £6.50

The only full feature machine-code version of the arcade game available for the B.B.C. micro. Features include: scrolling screen, radar display, checkpoint flags, fuel gauge, smoke screens, 6 skill levels, rankings, increasing difficulty, and sound effects.

R.M.P. Hanson

ALIEN DROPOUT (32K) £6.50

Based upon the arcade game of ZYGON, but our version improves upon the original arcade game itself. You have to shoot the aliens out of their "boxes" before the "boxes" fill up. Once full, the aliens fly down relentlessly, exploding as they hit the ground. Suitable for use with keyboard or joysticks.

R.M.P. Hanson

GALAXIANS (32K) £6.50

Fast action version of the popular arcade game. 4 types of Galaxian (in 3 initial screen formations) swoop down individually or in groups of two or three. 6 skill levels, high score, rankings, bonus laser bases and increasing difficulty. Superb sound effects and graphics.

INVADERS (32K) £6.50

Superb version of the old classic arcade game, including a few extras. 48 marching invaders drop bombs that erode your defences, and two types of spaceship fly over releasing large bombs that penetrate through your defences. Increasing difficulty, high score, superb graphics and sound.

FRUIT MACHINE (32K) £6.50

Probably the best fruit machine implementation on the market. This program has it all... HOLD, NUDGE, GAMBLE, spinning reels, realistic fruits and sound effects, multiple winning lines. This is THE fruit machine program to buy.

SUPERIOR SOFTWARE
Dept. CVG2
69 Leeds Road, Bramhope, Leeds.
Tel. 0532-842714

DISC SOFTWARE AVAILABLE NOW
All our programs are ready for despatch on 5¼" discs at **£9.90** each. Alternatively, all 7 programmes are available on a single disc for just **£49.90p.**

WE GUARANTEE THAT:
(1) All our software runs correctly on all current operating systems.
(2) All our software is available before we advertise.
(3) All our software is despatched within 48 hours by first class post.
(4) In the unlikely event that any of our software fails to load, return your cassette or disc to us and we will immediately send a replacement.

PLEASE ADD 50p per order for p. & p. +V.A.T. at 15%.

We pay 25% royalties for high quality programs.

Dealer enquiries Welcome.

CHANNEL 8 SOFTWARE

EXCLUSIVE

16K Adventures FOR ATARI by Brian Howarth

Enter the fantasy world of Britain's leading adventure writer. Travel in the Time Machine, seek the Golden Baton, avoid The Arrow of Death (a two part adventure). If you have 32k then try to Escape from Pulsar 7. Join the Circus or conduct the Feasibility Experiment. All on cassette. Only £17.99 each.

GENUINE ATARI 16K Ram Boards only £39.90

NEW LOW PRICE — ATARI 400 16K with Basic £199.00

THE BLACK SQUID. An exciting new game for Vic 20 owners. Needs 3k extra memory. Cass. £9.95.

DO YOU WRITE PROGRAMS ON YOUR ATARI? DO YOU FIND IT DIFFICULT TO CREATE ANIMATED PLAYERS? THEN YOU NEED

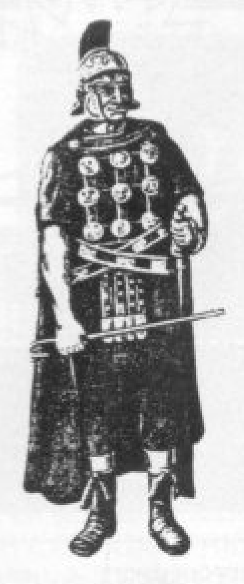
THE CONSTRUCTOR

In a few minutes even a complete novice can build an animated sequence up to 250 scenes long. 48k disk £24.95.

We carry one of the largest stocks of Atari software in the country. This has now been extended to include BBC, ZX81, Spectrum, Vic 20 and Dragon machines. Write or phone your order. Access and Barclaycard welcome.

DEALERS
If you haven't set up an account with Channel 8 yet then write now for trade terms and price list.

CHANNEL 8 SOFTWARE LTD, 51 FISHERGATE, PRESTON, LANCASHIRE PR1 8BH
TELEPHONE: (0772) 53057



M. C. LOTHLORIEN



A message for all Dragon and Sinclair owners

BEWARE THE IDES OF MARCH!

(all the best prophecies are late)

ROMAN EMPIRE
Our largest selling Spectrum game will be available for the Dragon 32 from April 1983 (yes we have avoided the Ides of March, poor old Caesar). The game will test your generalship as you build your armies, appoint generals and fight campaigns in your attempt to conquer armies in provinces of the Roman Empire. This challenging game takes full account of troop morale, fighting efficiencies, leadership ability etc. Three levels of play giving many hours of satisfaction.
DRAGON, SPECTRUM 16K, ZX81 16K.

WARLORD
(Dragon 32 and ZX81 16K)

Rule a village in 13th Century Japan, plan food production, attack and defend against other Warlords and their Samurai. Face leadership challenges. The penalty for failure is DEATH for you and your family! Three levels of play (ZX81 version does not contain ALL the above features).

TYRANT OF ATHENS
(ZX81 and Spectrum 16K)
Dragon

Can you survive long enough to turn Athens into the most feared state in the Mediterranean? Train troops, build warships, fight battles by land and sea against hostile Greek States and the vast Persian Empire. Many more features in this, our best selling game.

SAMURAI WARRIOR
(ZX81 and Spectrum 16K)
Dragon

How would you have fared as a Samurai in 13th Century Japan? Face challenges from other Samurai, give aid to villages and resist attacks by groups of marauding bandits. 7 levels of play, a most fascinating game.
Are you a survivor or will you commit ritual suicide?

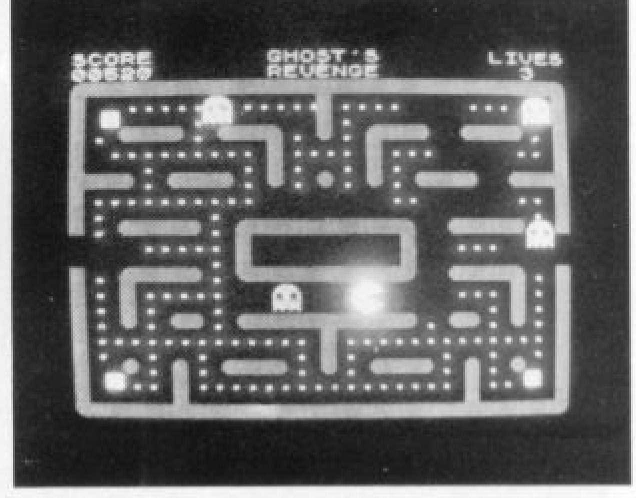
For **ZX81 16K** only **PELOPONNESIAN WAR** (see previous adverts for details.
All games contain comprehensive playing instructions, all Dragon titles feature high resolution graphics (many with maps), all ZX81 need 16K Ram, all Spectrum will run on 16 or 48K. **PRICE DRAGON £6.95; SPECTRUM £5.50; ZX81 £4.50.**

Cheques and PO's please, made payable to: M. C. Lothlorien,
Dept. C4, 4 Granby Road, Cheadle Hulme, Cheadle, Cheshire SK8 6LS.



ZX SPECTRUM

GHOST'S REVENGE



At last a maze-chaser game for the Spectrum that rivals the arcade original. Written in super fast machine code and featuring some of the best graphics, colours and sounds for the Spectrum. ★ Joystick or keyboard operation ★ Realistic gobble action in all 4 directions ★ Four intelligent ghosts that will chase or run from you ★ Pulsating power pills that change the ghosts' colours ★ Eat the running ghosts for 400, 800, 1200, 1600 bonus points ★ Skill level selection enables both beginners and experts to play ★ Harder levels feature invisible mazes ★ Full sound effects, tunes and top score.

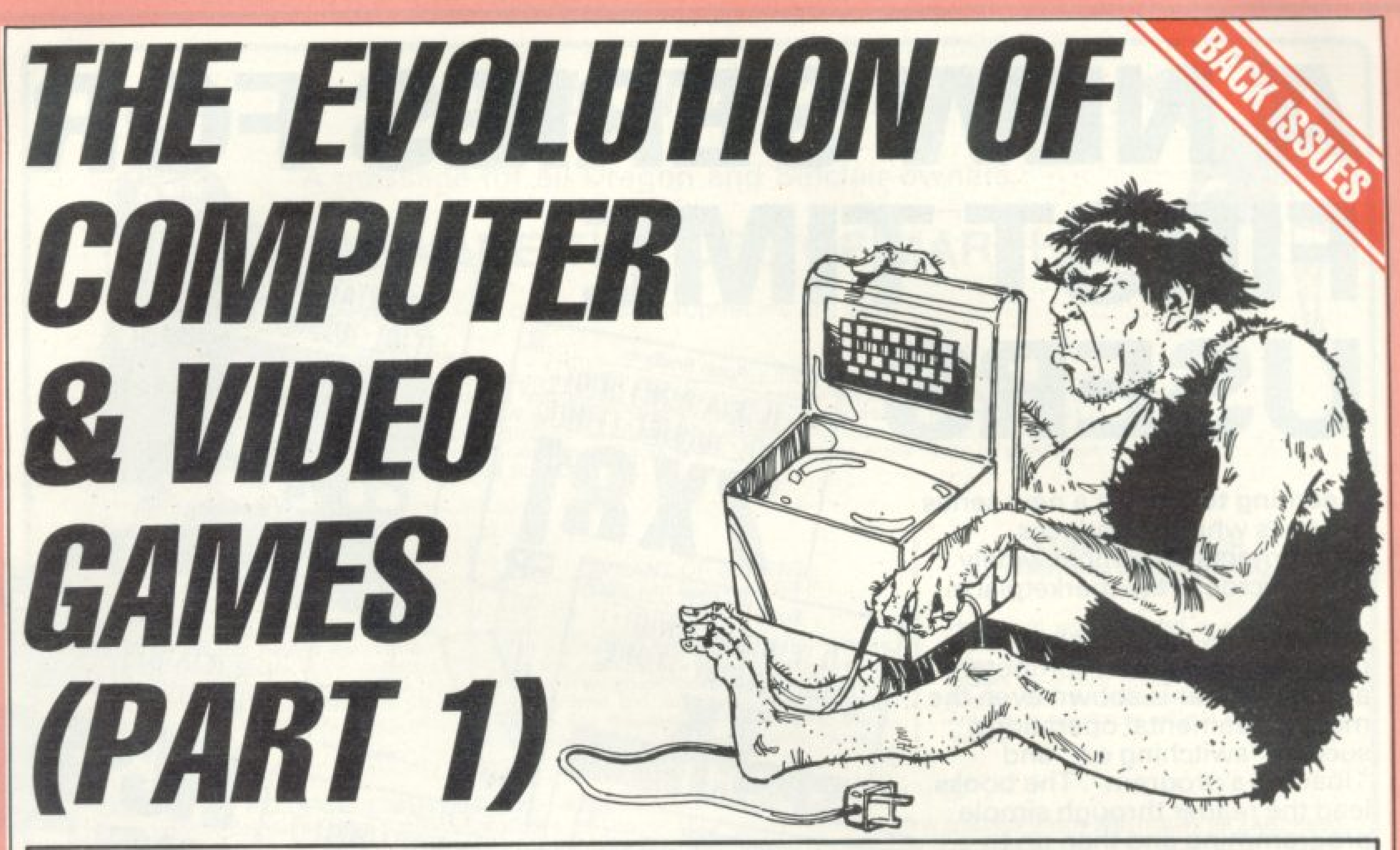
DESPATCHED BY 1ST CLASS RETURN POST

ONLY £5.95 **including 1st class post, packing**

C&VG1
Post coupon now to: MICROMANIA SOFTWARE, 14 Lower Hill Road, Epsom, Surrey KT19 8LT.
Please rush me
☐ copies of GHOST'S REVENGE @ £5.95
I enclose cheque/PO/cash for £______
Sorry no credit cards.
NAME __________
ADDRESS __________

Micromania

THE EVOLUTION OF COMPUTER & VIDEO GAMES (PART 1)



Most computer historians agree that the first known remains of Computer & Video Games date from November 1981. It was then that this magazine first emerged (a little unsteadily) into the primeval twilight of the early days of Sinclair Man.

Then huge computer dinosaurs roamed the Earth, thrusting keen young programmers into their wall-to-wall maws and the magazine looked a little out-of-place surviving on a diet of strange new features and listing material washed up from across the Atlantic.

Naturalists are only now beginning to draw conclusions about the close association between the Computer & Video Games story and a little yellow gobbling creature's own evolutionary niche . . .

Let us take a closer look at some of the noteworthy steps in the evolution of both:-

November 1981
The stripling emerges into twilight with Tarot on the Tandy, Musical Hangman on the Sharp MZ-80K, Trench on the Atari, Nibblers on the Pet and Super Nim on the Apple. Keith Campbell kicked off his popular Adventure series, Garry Marshall kicked off graphics with a space invader. There were Pacman arcade tips and Max Bramer looked at the first chess machine, Von Kempelen's Turk.

December 1981
Growing up fast with Potshot on the Vic-20, Breakout on the Atom, 'Round the Horn' on the Tandy, Mini Golf on the Atari and Pet owners could tackle Rubik's Cube with more confidence. Keith Mott went trouble-shooting on the ZX81 in Kit Korner and Screaming Foul-up fell in love with Terry Wogan.

January 1982
A new year begins with Ted Ball on the trail of the Bugs in his Practical Programming column. Speed Race for the Texas, Treasure Hunt was a popular Apple adventure — much converted by owners of other machines, three 1K wonders for the ZX81 and Changing Hearts for Atari owners. We also saw a seamier side to gaming with a feature on Softporn Adventure!

February 1982
Science Fiction author David Langford brought a new look to space games with Space Blockade. Dr Livingstone set up a quest for Sharp owners and Grand Prix gave Tandy owners a racetrack to try out. David Annal POKEd some sounds out of the quieter micros and Arcade Action announced two Pacman lookalikes.

March 1982
Robin Bradbeer reported from Las Vegas on a country going video crazy — how right he was. ZX81 owners got to grips with Reversi (Othello), there was Startrek III.4 for the Tandy and Octodraw had the Atari moving in eight directions at once.

April 1982
Spring came with Tim Metcalfe's feature on pinball, a revitalised sector of the arcades fighting back against Space Invaders. Engineer helped Atari owners rebuild the Golden Gate Bridge, Poker for the ZX81 and Ron Potkin's classic Tandy wargame Kriegspiel. Plus Pacman hit the home Video Screens at last.

May 1982
Computer Moderated Games were investigated by Terry Pratt (the first thoughts on Seventh Empire were voiced about here). Minotaur took the Vic-20 down into a maze and tried to lose it, Pacman arrived in a C&VG listing on a Pet, Minopoly for up to five Sharp businessmen, Meteorstorm took Apple owners by surprise and Earthport II won Tandy fans.

June 1982
The World Cup was upon us and we responded with World Cup Manager — written for the Sharp but without a PEEK or POKE and since converted to many a micro. Vic-20 owners were set afloat on a river torrent in Speedboat, there was Trolls Gold on the Apple and Dog Star Adventure on the Tandy. It also included issue 1 of our BBC Micro publication, Owl.

July 1982
Do the arcades have anything to offer the fairer sex? America was wooing women with Ms Pacman and we featured this first lady of the arcades in July. Imhotep took the Apple owners back to ancient Egypt, Moon Shuttle sent the Vic into space and Z-Xtra gave 16 pages over to Sinclair fans.

August 1982
Haunted House gave Atoms a shudder, Space Hopper made Tandy's jump to it and Rocks made Vic owners roll over and beg for more. Imagic launched a range of cartridges for the Atari VCS. Hardcore was given over to a game-player's guide to the Atari and Sue Garden gave us all a giggle with a computer widow's tale.

September 1982
Tron: out of the arcades came Walt Disney's graphically stirring film about being trapped in a computer game. We featured it first. Pacman appeared on the Atom and the Vic-20, there was Star Wars on the Atom and Colditz Adventure on the Tandy. Issue two of Owl gave BBC owners Speed Trial and X marks the Spot.

October 1982
C&VG saw out its first 12 issues with Space Watch on the Spectrum, asking you to befriend the aliens before it's too late! Sharp Defender, Galaxian Colony II on the Apple and the controversial Wild Strawberries on the Atari added to the action. And Pacman appeared in the Bugs cartoon!

Back issue enquiries to: Competition House, Farmdon Road, Market Harborough, Leicestershire. All orders should include the appropriate remittance made payable to Computer and Video Games.

THE MicroComputer SOFTWARE CLUB

FOR OWNERS OF VIC, ZX81, SPECTRUM, BBC, OR DRAGON MICROCOMPUTERS

Buying software for your computer is a gamble. Apart from the occasional review and, perhaps, a recommendation from a friend, you have precious little information upon which to base your purchasing decision.

Advertisements and clever packaging can make the the worst programs appear tremendous. It is not until you have 'gambled' your money that you discover how good they really are. Some are only slightly different to others you may already own; many are not as good as you would be entitled to expect; and others are just a complete waste of money. Of course, there are some excellent programs around, and many more appear month. Now there is a safe way of finding out about them.

- free membership -

THE MICROCOMPUTER SOFTWARE CLUB was started to make software purchasing easier, cheaper, and less risky. Membership is completely free of charge, as is the monthly Newsletter. Every month members receive full details on the best and latest programs available for their computer and, simply and confidently, are able to order any of the programs they choose at substantially less than normal prices.

large savings on top software

All programs are, at least, 10% cheaper than normal and, each month, the best of the most recent software is made available to members at 20% less than normal. Postage and packing is free on orders of two or more programs for delivery within the UK; ordering and payment are simple, and quality is guaranteed.

— no obligation —

Members are not obliged to buy a fixed number of programs from The Club. They buy what they want when they want. Whether it is one program in a year or one a month, they know that when they buy from THE MICROCOMPUTER SOFTWARE CLUB they are buying the best programs at the best prices.

- free Newsletter -

Our latest Newsletter offers programs from most leading suppliers - and from a few that, perhaps, you do not yet know. A program has to be good, very good, before it is recommended to members. It also has to be reliable and, even before the members' discount, it has to be good value for money. Subject coverage includes adventure, arcade, education, strategy games, household applications, family games, business, utilities and programming aids.

Remember, membership is completely free of charge and you are under no obligation to buy anything from The Club unless you really want to. If you own or use a ZX81(16K), Spectrum(16K or 48K), BBC (A or B), Dragon 32, or VIC (expanded or unexpanded), you should join THE CLUB.

JOIN TODAY

THE MICROCOMPUTER SOFTWARE CLUB
P.O.Box 166, Oxford, OX2 9BJ, England.

Free membership application

Please accept my application and enrol me as a member of The Microcomputer Software Club. I understand that membership is free of charge.

As a member I will receive the Club Newsletter free of charge and will be entitled to benefit from any savings offered to members on selected programs for microcomputers. I may cancel my membership at any time.

When completed, return form to:-

THE MICROCOMPUTER SOFTWARE CLUB
P.O.Box 166, Oxford, OX2 9BJ, England.

NAME
ADDRESS

CITY
POSTCODE AGE (If under 18)
COMPUTER MODEL COMPUTER RAM
SIGNATURE

MAIL ORDER PROTECTION SCHEME

Members of the Periodical Publishers Association have given to the Director General of Fair Trading an undertaking to refund monies sent by readers in response to mail order advertisements (except for classified advertisements) placed by mail order traders who fail to supply goods or refund the monies owing to liquidation or bankruptcy. This arrangement does not apply to any failure to supply goods advertised in a catalogue or in a direct mail solicitation. Publishers in membership of the Periodical Publishers Association are making these refunds voluntarily and readers' claims can only be entertained if the following conditions are fulfilled:

1. The mail order advertiser is the subject of liquidation or bankruptcy.
2. The reader can establish proof of payment.
3. The reader has informed the publisher immediately if the goods or a refund have not been received 28 days after date of placing the order.
4. The reader has lodged a claim within 3 months of date of appearance of advertisement.

Any claim or notification received after these stated periods will be considered at the discretion of the publishers.

FREE COMPUTER GAMES

SPECIAL OFFER FROM THE UK'S LEADING GAMES LIBRARY

Hire your first computer game for free!! Too good to be true? Not if you accept our generous introductory offer.

We can supply a comprehensive range of top name computer games on cassette, cartridge and disc and can cater for most major Home Computers.

Just send your name and address to Supasoft and we'll offer you your choice of computer game for hire absolutely free of charge. Write today to:

SUPASOFT GAMES LIBRARY
2 Station Rd., Hammerwich, Walsall,
W. Mids.

YOU NEED NEVER BUY A VIDEO GAME AGAIN

PANCOM

New Releases for the Atari VCS

Coleco		**Dimax**	
Donkey Kong	27.95	Astro Chase	21.95
Mousetrap	27.95	Space Robot	21.95
Gorf	27.95	**Tigervision**	
Onbase		King Kong	23.95
Assault	21.95	Threshold	21.95
		Jawbreaker	23.95
Activision		**20th Century Fox**	
Megamania	21.95	Turmoil	26.95
Pitfall	21.95	Alien	26.95
Spider Fighter	21.95	Worm War	26.95
Sea Quest	21.95	Beany Bopper	26.95

Special Offer for March: Limited availability.

Pac Man	23.95	Defender	23.95

Joysticks Le Stick: Red Ball: Track Ball: Trak Ball: Quick Shot:

Best sellers in Atari 400-800 software

Our selection . . . full lists on request.

Frogger 16KC 32KD 22.95
Choplifter 48KD 23.05
Centipede 8K Cart 30.45
Shamus 16KD 16KC 22.95
Deadline 32KD 32.85
Canyon Climber 16KD 16KC 19.65
Zork I 32KD 26.25
Galaxian Cart 30.45
Preppie 16KC 32KD 19.65
Snooper Troops 1 48KD 29.55
Snooper Troops 2 48KD 29.55
Ultima 2 48KD 39.45
Defender Cart 30.45
Zork 2 32KD 26.25
Rearguard 16KC 13.15 24KD 16.45
Star Raiders Cart 30.45
Lunar Lander 24KC 9.85 32KD 13.75
Miner 2049 16K Cart 32.85
Zaxxon D/C 26.25
Gorf 16KD 26.25 16K Cart 29.55
Planet Miners 24KC 10.50
Voyager 32KD 16.45
Shootout at OK Galaxy 16KC 13.15
Legionairre 16KC 23.05
B.I. Nuclear Bomber 16KC 10.50
Moon Patrol C 16.45
Stellar Shuttel 16KC 32KD 16.35
Starbase Hyperion 24KD 15.05
24KC 13.15
Jeepers Creepers 32KD 19.75
Sneekers 48KD 19.70
O'Reillys Mine 16KC 16KD 22.95
Mission Asteroids 40KD 16.40
Starcross 32KD 26.25
Qix Cart 30.45
Mouseattack 32KD 22.95

For full lists send 9"×4" stamped addressed envelope stating VCS or Software. Postage, etc., 60p per item. Two or more post free.
Mail order & enquiries: Pancom, 6 Tranby Drive, Grimsby, S. Humbs.
Telephone: (0472) 694196 Mon. to Fri. 9am to 5.30p.m.
Sat 9am to 12pm.

SPECTRUM 16/48 ZX81-16K/DRAGON 32/BBC A+B

ADVENTURE 200 (16k)

OVER 200 PLACES to explore. Written in machine code and using advanced data compression techniques it squeezes a true fixed-map adventure into just 16K — all held in ram — no extra cassette reads or books of text. Unlike a randomly generated maze type game this is a real test of your tactical skill. It starts easy but the further you progress the more dangerous and difficult the problems become as you use objects around you to overcome obstacles and you are the hero! Flexible command format allows abbreviation multiple word lines.

Other games from Foilkade include:

AWARI — Ancient African game of logic

FANTASTIC VOYAGE — (ZX81 16K only) Real-time simulation of micro-sub in human body. Real vascular map and fast m/code graphics.

THE FOILKADE CHALLENGE: Buy both Adventure and Awari and enter our prize competition. SAE for details.

All games £5.95 inc. 2 for £9.95 3 for £13.95

£1000 IN PRIZES

FOILKADE LTD

Dept CVG, 66 LITTLEDEAN, YATE, BRISTOL BS17 4UQ

ADVERTISEMENT INDEX

ALL THE FUN OF THE AIR

How do you fancy getting away from it all with a trip in our hot air balloon?

Sounds tempting doesn't it. But it takes skill and fast reactions to avoid all the hazards.

Are you up to it?

Could you manoeuvre the balloon over the tree tops and mountain peaks, while still keeping an eye on your ballast and your fuel because when it starts to run low you'll have to descend and not being distracted by people throwing stones at you land carefully on the fuel pods. You'll be lucky to rise back up again. But look out!!

Watch that kite doesn't become entangled with you and don't worry about that noise its only the aeroplanes that come diving and swooping at you. You'll need to rise higher to avoid the turbulance from the windmill blades but as you do you're likely to run into storm clouds and bolts of lightening. Also the higher you climb in the stratosphere the more difficult the balloon becomes to handle.

By now you'll start to panic!! and wonder how on earth you're going to make it, but then again that's all the fun of the air.

UP UP and AWAY

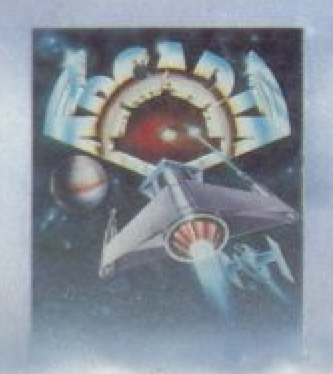
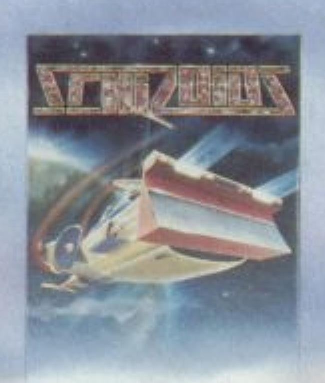
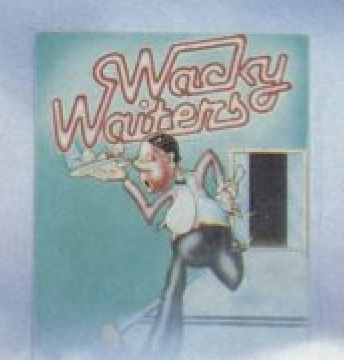
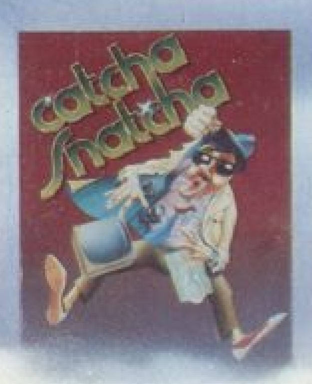
Post Coupon now to
Pulsar Software, 15 Moorfields, Liverpool L2 2BQ.
Please rush me ______ copies of **up, up and away**
Suitable for Atari 400/800 16K cassette or 32K disc.
Please debit my Access/Barclaycard
(Delete as necessary)
Card Number
I enclose cheque/P.O. for £______
Name ______
Address ______
CVG1

SUPERFAST CREDIT CARD SALES LINE:
051-236 2372 24hrs

£21·95

pulsar

Pulsar Software, 15 Moorfields, Liverpool L2 2BQ.




Wacky Waiters

catcha snatcha

Ah
diddums


imagine
..the name
of the game